

PENNSYLVANIA COASTAL ZONE MANAGEMENT PROGRAM

DELAWARE ESTUARY



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SUMMARY OF COASTAL
PROJECTS AND STUDIES
1979-1981

PENNSYLVANIA COASTAL ZONE MANAGEMENT PROGRAM

OFFICE OF RESOURCES MANAGEMENT
Patrick Solano, Deputy Secretary

US Department of Commerce
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INTRODUCTION

In October, 1980 Pennsylvania received formal federal approval of its Coastal Zone Management program. Since that date, Pennsylvania has used more than \$2.99 million to implement the objectives, goals and policies embodied in the program. Much of this money has been made available to the local municipalities in the two coastal zones on a competitive basis. These local governments have been encouraged during the last three years to apply for funds to: conduct special feasibility studies; improve public access and recreation on the waterfront; update comprehensive plans and zoning ordinances and promote economic development. Although funding for construction and land acquisition has been extremely limited, Pennsylvania is proud of the accomplishments of the Coastal Zone Management program which have occurred since Federal approval in 1980. The purpose of this booklet is to briefly summarize the locally initiated and State-developed projects which have been accomplished during the period from 1979 through 1981 as a direct result of the Coastal Zone Management program.

Pennsylvania's Coastal Zone Management program was formulated as part of the Coastal Zone Management Act, enacted by Congress in 1972, in response to development pressures affecting the shoreline of the



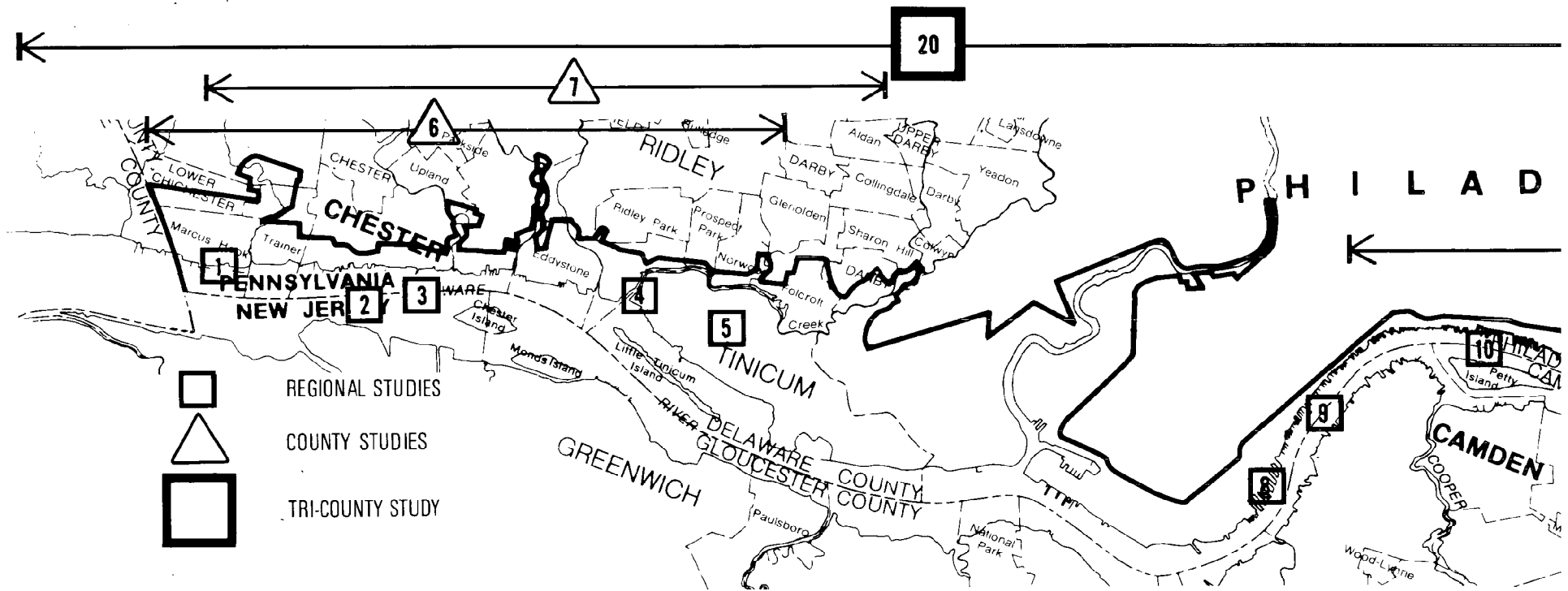
Samples of Coastal Zone Management projects summarized in this booklet.

country's oceans, estuaries and Great Lakes. The Act encouraged states to develop comprehensive programs to foster wise use and effective management of coastal land and water resources. The voluntary program has been administered by the National Oceanic and Atmospheric Administration (NOAA) in the U.S. Department of Commerce.

Completion of the projects summarized in this booklet has demonstrated a commitment to newly required land use and shore protection policies; has been responsible for improvements in port, coastal recreation and industrial facilities; and has resulted in a better understanding of the complex issues and needs of Pennsylvania's valuable coastal areas.

- 1 Mc Clure Park Expansion Study - for Marcus Hook Borough, Delaware County, PA
- 2 Design Drawings and Specifications of Commodore Barry Bridge and Boat Launch
- 3 Water Quality Monitoring Program for the Delaware River at Chester, PA
- 4 Marina Feasibility Study - for Ridley Township, Delaware County, PA
- 5 Comprehensive Plan Update 1981 - for Tinicum Township, Delaware County, PA

- 6 CZM/Industrial Sites Study, Phase I for the Delaware County Coastal Zone
- 7 Erosion and Sediment Control in Delaware County
- 8 South Delaware Waterfront District Plan
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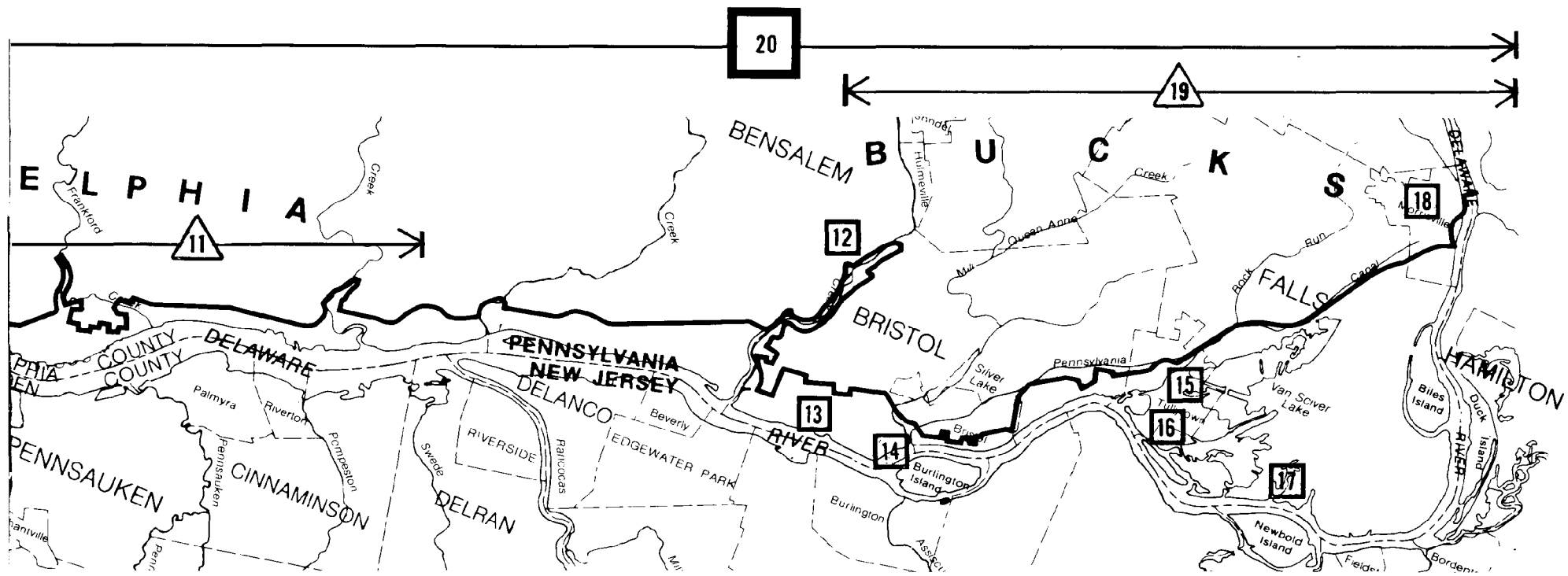
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- 20 Resource Protection Plan for the Pennsylvania/Delaware River Coastal Zone



MC CLURE PARK EXPANSION STUDY - for Marcus Hook Borough, Delaware County, PA by The Delta Group

McClure Park is a .4 acre water-front park in Marcus Hook, Delaware County. It has been proposed to expand the site to six acres and the river frontage from 80 to 750 feet. This location was designated a "geographic area of particular concern," with significant recreational, historic, and/or cultural value, in the Pennsylvania CZM Program.

The consultant has made eight recommendations for expanding the park:

- land acquisition through fee-simple techniques or donations

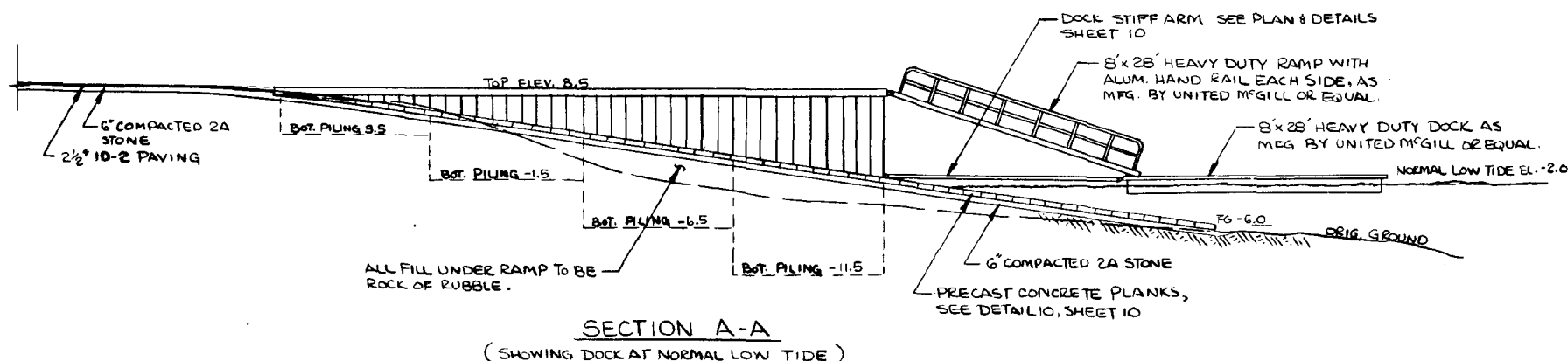
- a "natural passive setting" as most consistent with residents' concerns
- the development of a restaurant
- construction of a public boat launch
- relocation of launch ramp and tug boat operation to avoid conflicts and traffic congestion
- rezoning fishing areas
- widening of Delaware Avenue
- recovery of lost recreation areas through Federal Coastal Energy Impact Program funds

Several designs and alternatives have been presented, as well as potential sources of funding.

DESIGN DRAWINGS AND SPECIFICATIONS OF COMMODORE BARRY BRIDGE AND BOAT LAUNCH by Pennsylvania Fish Commission

February 1, 1974 marked the opening of the Commodore Barry Bridge and the closing of the Chester-Bridgeport Ferry, creating a four-acre tract of land at the foot of Flower Street in Chester City. In 1982, a 25-year lease was negotiated for this area. Using a grant from the Pennsylvania CZM Program, the Fish Commission designed a series of boat launching ramps, fishing platforms, floating docks and parking spaces for cars, boats and trailers. Construction of the first phase of this project is scheduled to begin in late 1982 and should take approximately one year.

Diagram of Boat Dock at Commodore Barry Bridge.



WATER QUALITY MONITORING PROGRAM - for the Delaware River at Chester, PA by U.S. Geological Survey

The U.S. Geological Survey's water quality monitoring station at the Delaware Memorial Bridge on the Delaware River at Chester, was dismantled in 1980 due to the lack of operational funds. This station is strategically located to produce valuable water quality data essential to planning and fishery management and diadromous fish (fish that migrate between salt and fresh water) restoration programs of four states on the Delaware Basin. The monitoring program had been in continuous operation from 1961 to October 1980.

Recognizing the importance of the Chester monitoring effort, the Pennsylvania Fish Commission, on behalf of the CZM Program, contracted with the USGS to re-equip and staff the Chester Station and operate it as a project of six-month duration, covering two three-month segments -- March 1, 1981 to May 31, 1981 and July 1, 1981 to September 30, 1981. Due to potential ice and river traffic damage at the original site, the station was relocated to the Scott Paper Company pier in Chester.

The major objective of the study was to obtain water quality data during the critical time period when elevated temperatures and low dissolved oxygen become serious limiting factors for fish and aquatic life. The operation of this station would permit

the USGS to seek more permanent funding sources for this and other monitoring stations on the Delaware estuary which were temporarily abandoned.

As a result of the study, valuable hourly water quality data on pH, dissolved oxygen, specific conductance, and temperature were acquired. This data will be useful in future planning activities related to fish stockings and passage facilities at dams. It will also encourage recreational angling and boating access projects in the Delaware Basin and estuary.

MARINA FEASIBILITY STUDY - for Ridley Township, Delaware County, PA by Direction Associates, Inc.

A study on the feasibility of developing a marina/boatramp/recreation area along Darby Creek was conducted by Ridley Township in Delaware County. The site selected for consideration is a 5.7 acre tract of vacant land on the northeast corner of the intersection of Sellers Avenue and Pennsylvania Route 291. It lies on the western bank of Darby Creek one-half mile north of the mouth of the Delaware River.

Currently owned by Boeing-Vertol, the site is up for sale. No portion of the land area is more than ten feet above the mean level of Darby Creek, and thus the site is defined as lying within the 100-year floodplain. Dense trees now occupy a

substantial portion of the site, which is surrounded on the south, east, and west sides by industrial and vacant land, with a small residential community and a sanitary sewage pumping station lying to the north. The development of a marina at this site could take advantage of the major roadways in the area, such as Interstate 95 and Route 291, and provide good access for users of this facility. The subject site provides convenient access for motorboats to the Tinicum National Environmental Center, which lies immediately to the north.

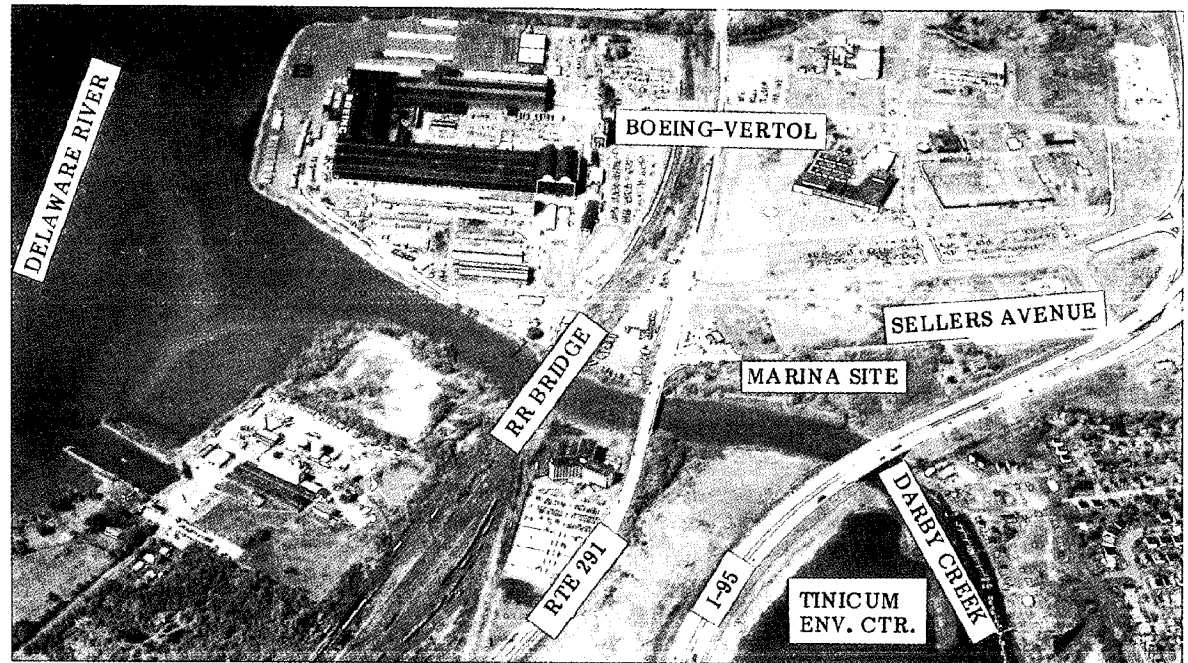
A market analysis study was undertaken to determine the need for a marina along Darby Creek. A survey indicated that there are presently no public launching facilities in Delaware County and analysis suggests that there is a strong latent demand for boating access facilities in Delaware County. By providing new ramp facilities, it is hoped that residents who register and use their boats in other states will be attracted back to Pennsylvania for a part of their boating activities.

Ridley Township also prepared a study to assess the needs for recreation in the community. It was concluded that increased waterfront recreation areas, open space and boating facilities are desirable, and the proposed project was supported.

Three plans for developing the site were considered, recognizing that funding by the Pennsylvania Fish Com-

mission requires a minimum of 50 parking spaces for cars and trailers. The most desirable plan is estimated to cost \$450,000: \$60,000 for land acquisition and \$390,000 for development. Yearly maintenance costs are expected to run to \$4,000 a year.

The township is investigating funding from the Pennsylvania Fish Commission's Municipal Lease Program and the Bureau of Recreation and Conservation of the Department of Community Affairs. If the township is successful with either of these applications, it will still be necessary for it to provide approximately \$30,000 toward the acquisition of the site, offering Boeing-Vertol the appraised price. Construction activities would probably take less than six months to complete.



Aerial View of Marina Site at Ridley Township

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COMPREHENSIVE PLAN UPDATE 1981 - for Tinicum Township, Delaware County, PA by Herbert E. MacCombie, Jr., Engineers

Tinicum Township is located in the southeastern part of Delaware County along Darby Creek and the Delaware River. It is composed of 3731 acres of land which includes the mainland as well as Little Tinicum Island.

The township can devote only 44% of its land to various land uses since the remainder is taken up by Philadelphia International Airport and the Tinicum National Environmental Center. At the time of this study,

about 10.75% of Tinicum's land was used by industries. These included Westinghouse Electric, Union Carbide, Scott Paper, and the Gulf and Arco oil refineries. It is hoped that industrial development will increase in the future with completion of I-95 and greater use of air, port and rail facilities in the area.

A Comprehensive Plan for the township was first developed in 1968. The purpose of the present study is to update this plan, and more importantly, to propose zoning changes and land development consistent with the Coastal Zone Management Program, and to provide for development of a

comprehensive stormwater management program. The updated plan takes into consideration a number of factors which have changed the township recently. These include construction of I-95, expansion at Philadelphia International Airport and the creation of the Tinicum Environmental Center at Tinicum Marsh. The new plan specifically calls for:

- revitalization of homes in Essington and Lester
- clustered residential development in two small additional areas

- development of an industrial park between Tinicum Island Road and Lester
- construction of a shopping center at the northeast corner of the Industrial Highway and Wanamaker Avenue
- construction of two boat ramps to provide both emergency and recreational access to the Delaware River.

Future development in the coastal zone area of the township is encouraged in the plan, as long as it is consistent with all existing wetland and floodplain standards. Plans must also adhere to the Clean Air Act, the Clean Stream Act, and Pennsylvania DER's Title 25, Chapter 105 on Dam Safety and Encroachments.

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CZM/INDUSTRIAL SITES STUDY, PHASE I - for the Delaware County Coastal Zone by the Delaware County Planning Department

The coastal zone portion of Delaware County consists of 13 communities which lie between Philadelphia International Airport and the Delaware state boundary.

Due to the critical need for revitalization, the area between Route 291 and the Delaware River is the main focus of this study. This area is characterized by heavy industry and oil tank farms, which provide about

75% of all manufacturing jobs in the county. The accessible location attracted major national industries such as ship-building, aircraft manufacturing, petrochemicals and paper.

Phase I of the Industrial Sites Study represents the first part of a two-part study in which several underutilized properties were selected for market analysis. The Phase I Study focused on data collection and formation of a coastal zone coordinating committee (CZCC) to help select specific sites for short-range redevelopment. Phase II activities will consist of developing site specific reuse and marketing strategies. The CZCC has 12 members from both public and private sectors and was a useful advisory body during both phases of the study.

One of the sites considered for reuse is LCA Leasing.

A series of documents already prepared on particular sites within the study area were reviewed. A site survey of the study area was then conducted to document present land use patterns to update the 1976 river corridor map. Ten vacant houses and several underutilized industrial areas were identified. (Underutilized means that industrial operations have been scaled down and facilities were presently being used as warehouses or storage areas.)

Among the vacant or underutilized sites selected for further study in Phase II were: Marcus Hook Development Park in Marcus Hook; Headley Hauling in Trainer; L.C.A. Leasing Corp. in Chester City; Monroe Chemical Co. and Eddystone Industrial Park in Eddystone; and Linde/Conrail in Tinicum.



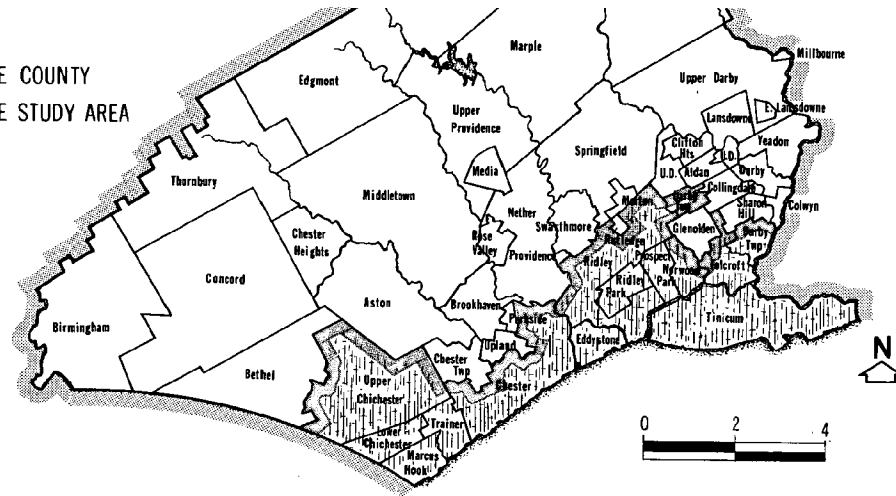
EROSION AND SEDIMENT CONTROL IN DELAWARE COUNTY by the Dela- ware County Conservation District

A study prepared for local government officials assessed the regulatory procedures for erosion and sedimentation control in the 13 municipalities of Delaware County. Under consideration was the extent to which the coastal zone is protected against the harmful effects of earth-moving activities by builders and developers. Municipal ordinances dealing with erosion and sedimentation control were collected and evaluated. The enforcement capabilities of local and state agencies were then assessed.

The study recommends that:

- affected municipalities adopt stormwater management and erosion/sedimentation control ordinances. Implementation policies must be included
- working relationships be developed with the county conservation district
- state officials and DER's Bureau of Soil and Water Conservation develop a more stringent policy when dealing with violators of the Clean Streams Act
- administrators of erosion/sedimentation programs enlarge their control beyond the coastal zone area to a watershed basis,

DELAWARE COUNTY
COASTAL ZONE STUDY AREA



covering sediment that travels
great distances before settling

- a storm water management program be funded in Pennsylvania to handle both flood plain management and erosion/sediment control.

SOUTH DELAWARE WATERFRONT DISTRICT PLAN by the Philadelphia City Planning Commission

The South Delaware Waterfront District extends along the edge of the Delaware River for approximately three miles from the northern border of the Navy Yard to Catherine Street. Inland it runs from the river to I-95, a distance of from 1.75 miles at its widest point at Greenwich Terminal to only 600 feet at its narrowest point at

Catherine Street. The district contains a significant portion of the region's port facilities, which are a major resource for the economic development of Philadelphia. Port facilities in the district include the Packer Avenue Marine Terminal, Conrail's major coal and ore terminals at Greenwich Yard, and a number of finger piers owned by the Philadelphia Port Corporation for handling break-bulk cargo. Major industrial users in this area are Publicker Industries and the Amstar Corporation. Other significant employers are United Parcel Service, Crown Paper Board, Brite Star, Inolex, Friel Bernheim, and United Nesco. Over 5100 workers are employed in the district.

The area features direct access to the region's highway system and is served by both Conrail and the Chessie System.

The South Delaware Waterfront District Plan presents a set of policies to guide future development of the area in a manner consistent with overall goals for the City of Philadelphia. The primary goal of the plan is to maintain and encourage maritime and other viable business activities. The plan calls for port and industrial zoning to be continued in the area south of Reed Street. This would improve conditions to support retention and growth of industry and the port, and provide direct development assistance to industrial and port-related firms. The plan makes proposals for improving specific port facilities such as the Packer Avenue Marine Terminal and

Piers 82, 84, 96, 98 and 100. Increased port activity would be accomplished by marketing the ports' competitive advantages to shippers, supporting the development of the Coast Guard Marine Safety Office and increasing the role of coal exports through the Philadelphia ports.

Industrial development is encouraged by providing assistance to firms wishing to expand. Additional employee parking for areas needing it, and improving public services such as sanitation, street cleaning and police protection in the area would be feasible. A new 35-acre port industrial park is suggested at the Kerr-

McGee site, as well as continued support for private development proposals for the district. Commercial and residential development on existing obsolete piers and vacant underutilized railyards at the foot of Washington Avenue is encouraged.

The plan also recommends a number of transportation improvements to the South Waterfront District. These include completing construction of I-95, extending Washington Avenue east of Delaware Avenue to improve traffic circulation, and improving rail service by resolving rail clearance and curvature limitations on high and wide cargo.

Front Street at Christian in Philadelphia 1870



CENTRAL RIVERFRONT PLAN by the Philadelphia City Planning Commission

The Central Riverfront District is a 200 acre strip of land lying between Interstate 95 and the Delaware River. It is bounded by Spring Garden Street on the north and Reed Street on the south at the eastern edge of the city of Philadelphia. There are three distinct subareas of the district: North Bridge, Penn's Landing and Penn's Landing South. Both North Bridge and Penn's Landing South contain a number of vacant finger piers, while Penn's Landing presently consists of 24 acres of public open space. The district contains 23 firms which employ 466 persons in marine services, wholesale trade and warehousing, food processing and recreation.

Specific recommendations contained in the Central Riverfront Plan include:

- The development of Penn's Landing as a major public attraction and activity center with construction of a riverfront plaza, restaurants, shops and markets. Hotel and convention facilities and high-rise residential buildings would also be at the site.
- Existing finger piers at both North Bridge and Penn's Landing South would be developed as a mixture of low-rise housing or townhouses, retailing establishments, open space, and parking facilities.

- Improved access to the riverfront provided by a Riverwalk, which would eventually stretch from Reed Street to North Bridge and two new marinas.
- Transportation improvements, including access to highway links such as I-95 and completion of Delaware Avenue reconstruction. Regular and special event bus service would be increased.

Full development of the Central Riverfront would result in construction of approximately 6000 housing units and the creation of a major new commercial and retail center. Completion would take 10 to 15 years at a total public and private cost of about one billion dollars. Implementation of the plan would create over 3900 new, permanent jobs.

PHILADELPHIA WATERFRONT INDUSTRIAL AREA by the Philadelphia City Planning Commission

The changes in energy and transportation technology made the use of waterfront lands the subject for study during the summer of 1981. Industrial and port-related uses were evaluated when a survey was taken of all existing waterfront industries. The City planned to use the results to design strategies for future waterfront development.

The survey found that over 380 industrial firms are located on the City's Delaware and Schuylkill water-

fronts, employing more than 20,000 people. The majority of these firms are small, but the greatest number of jobs are provided by the largest employers. National studies have reported that while small firms create new jobs, larger ones are showing decreases in workers.

On another level, the study points out that as goods-producing industries, dominated by large firms, are declining in employment, the service industries, composed of smaller companies, are growing. When questioned on future development, most firms had a positive outlook on continuing operations, expanding and/or moving to accommodate new growth.

The information gathered indicates that Philadelphia's waterfront is a strong industrial location. These industrial firms are healthier than the overall industrial base throughout the City and are an asset to the growth and strength of Philadelphia as a site of commerce.

PHILADELPHIA'S RIVER RESOURCES by the Philadelphia City Planning Commission

This report is part of the Comprehensive Riverfront Plan being prepared by the City of Philadelphia for the Delaware and Schuylkill rivers and their adjacent waterfront lands. The study area was surveyed for significant plant and wildlife communities and for environmental conditions, including flooding and air and noise pollution.

Water quality was summarized with emphasis on dissolved oxygen levels, the presence of metals and waste substances, and ensuing effects on fish population. It was found that high oxygen concentration supports good fish populations in the Delaware north of the Tacony-Palmyra Bridge

and in the Schuylkill above Fairmount Dam. The greater portion of both rivers cannot sustain recreational fishing due to low dissolved oxygen levels. When completed in 1987, the City's \$900 million pollution abatement program will reduce the discharge of organic material by over 75%, and thus greatly improve fish populations in the Delaware.

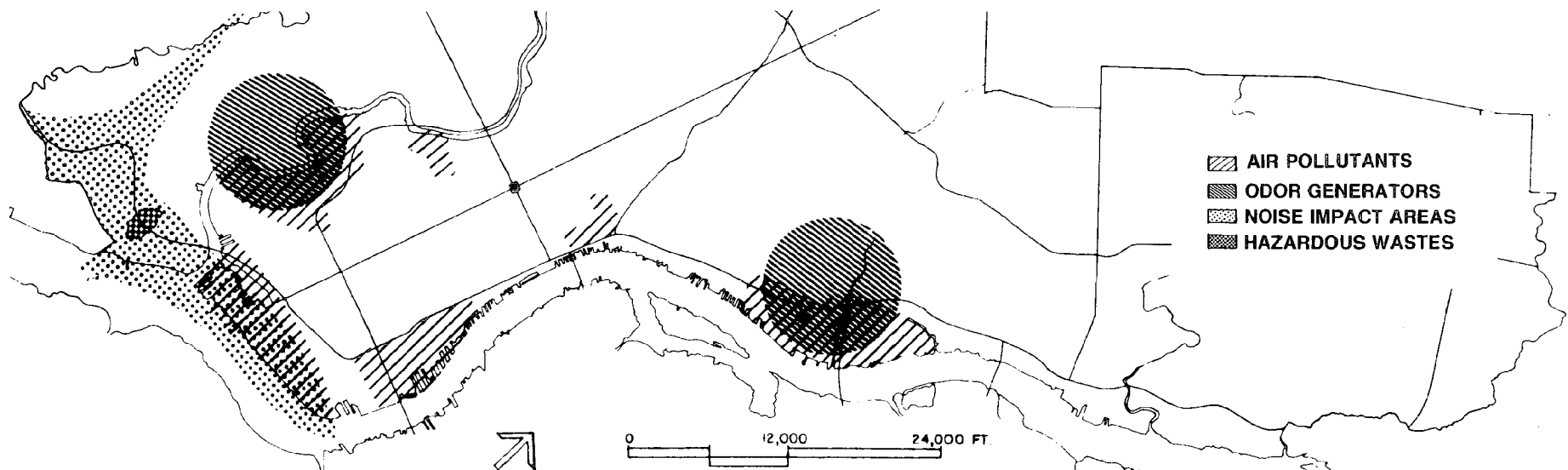
Environmental concerns considered in the study included the need to maintain existing shallow areas for fish as well as to preserve wetlands, which furnish natural wildlife habitats for birds and other animals.

Industrial development has concentrated along both rivers, and is a source of odors and air pollutants. Specific locations where air pollution is a problem are the oil refinery area

on the east bank of the lower Schuylkill and in the Bridesburg section of the North Delaware Riverfront. Philadelphia International Airport is a major noise source to the area, but arrivals and departures occur along paths over the river, and away from residential neighborhoods of South and Southwest Philadelphia.

The study makes a number of recommendations for the resources of the rivers. It emphasizes the need for additional scientific studies of fish population and water quality, the development of greater public access to the rivers, as well as additional boating facilities. Fishery management and landscape plantings along some riverfront lands are also suggested. The study concludes that existing environmental laws provide adequate authority for control of floodplain development, air pollution, and dumping of hazardous waste materials.

Environmental Nuisances in Philadelphia Area



MASTER PLAN STUDY OF JAMES ARMSTRONG MEMORIAL PARK - for Bensalem Township Parks and Recreation Board, Bucks County, PA by Carroll Engineering Corp.

James Armstrong Memorial Park is a site of approximately 20 acres situated along the Neshaminy Creek in the eastern section of Bensalem Township, Bucks County. There are a number of exciting and diverse natural features, all of which are quite suitable for active (camping, boating, swimming) and passive (sightseeing, fishing, hiking) recreation in a true park-like setting. This is enhanced by a dense canopy of deciduous trees covering 70% of the site. The extensive frontage along Neshaminy Creek of approximately 1600 feet, coupled with easy vehicular access to nearby roads, such as I-95 and the Pennsylvania Turnpike, provides the opportunity for excellent public access.

Three alternatives for development or Master Plans have been prepared. The three progressive Master Plans are: MP 1 -- Limited Development; MP 2 -- Moderate Development; and MP 3 -- Full Development. In each case, the design will emphasize the recreational opportunity, both active and passive, of the Neshaminy Creek while also providing for a day use neighborhood park.

Using an accumulative approach, each phase of design is conceived to fit into subsequent future phases which reflect a more complete park with a wide range of facilities. In this way,

the township can consider developing Plan 1 and at later dates develop Plans 2 and 3 as funds become available. Plan 3 is in the best interests of the township's population, since the facilities it provides serve more age groups through more seasons of the year. The growing population of Bensalem Township would seem to encourage full development of the site.

The total construction costs for the complete project are estimated to be \$290,000 with \$250,000 for construction and \$40,000 for engineering. Estimates of yearly maintenance costs are around \$25,000.

BRISTOL TOWNSHIP MARINA FEASIBILITY STUDY, Bucks County, PA by Direction Associates, Inc.

Bristol Township commissioned a study to determine the market and physical feasibility of developing a sailboat marina within the township coastal zone. The goals were to increase public access to the Delaware River Coastal Waterway and to develop an additional recreation facility close to existing residents.

The feasibility of developing a sailboat marina must first measure the strength of demand in relation to available facilities. Presently, there are no marinas in the Bucks County Coastal Zone which exclusively accommodate sailboats. Power craft are favored in existing facilities, and the demand for sailboat slips during the

winter season increases when those owners remove their craft from Chesapeake Bay marinas. The socio-economic characteristics in Bristol Township as well as Bucks County were examined to determine whether sufficient support existed for construction of specialized facilities.

The study concludes that only 10% of those active in boating participate in sailboating. Because of limitations for non-powered sailing on the Delaware River, a new marina would most likely attract auxiliary powered sailboats to occupy slips and there are adequate facilities for these craft in the area at the present time. A physical inventory suggests no suitable or available site for development of such a facility, when conditions of existing use, zoning and ownership are examined.

The final recommendation to the township is to abandon the development and construction of a sailboat marina within the study area. However, additional recreational opportunities and public access to the Delaware River Coastal Zone could be developed. The Neshaminy State Park Marina and Overlook Park are examples for future consideration.

OTTER CREEK MARINA FEASIBILITY STUDY - for Bristol Borough, Bucks County, PA by Direction Associates, Inc.

The site of this study is a 20-acre tidal basin where the Otter Creek converges with the Delaware River in

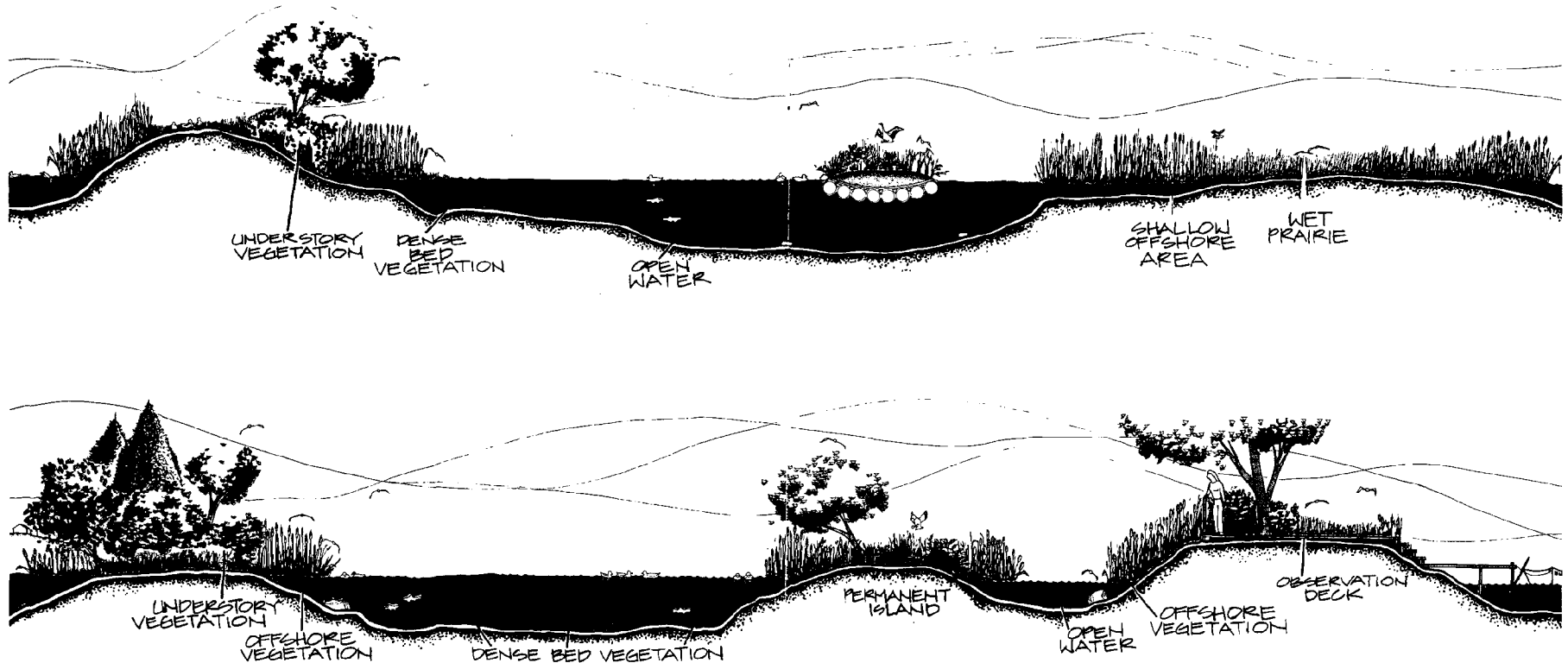
Bristol Borough, Bucks County. It has been classified as a tidal wetlands area which, according to federal and state laws, must be preserved and protected.

The proposed project calls for construction of a public marina and various on-shore boating and recreational facilities. Two prior studies of

the site were conducted by C. A. Chaney & Associates in 1962 and the U.S. Army Corps of Engineers in 1970. Both studies concluded that construction of a marina at this site was physically and financially feasible, as well as economically justified.

In the present study, a market analysis of the site was conducted. It

Current regulations protecting tidal wetlands will make the construction of a full-service marina at Otter Creek unlikely.



was concluded that there is increasing demand for boating facilities closer to the boat owner's residence. The existing and proposed marina facilities in the area are not sufficient, and additional marina facilities are therefore desirable at Otter Creek. The study recommends that the berthing facilities of the Otter Creek marina should be as presented in the Corps of Engineers study with a total of 316 boat slips (fewer for smaller boats). In addition, it was felt that public development in the on-shore areas should be limited to boat storage buildings, parking and driveways, a marine gas station, and travel-lift/forklift equipment.

Other public recreational facilities such as a swimming pool and tennis courts, recommended in previous studies, should not be developed in this wetlands area because they are not water-dependent.

Total development costs for the Otter Creek Marina, including dredging the wetlands and berthing area, building the piers and boat slips, and on-shore improvements were approximately \$3,000,000. Annual operating costs for the completed project ranged from \$85,000 to \$105,000.

Because funding for development of an Otter Creek Marina is presently uncertain, and an alternative proposal for converting Otter Creek Basin into a Bristol Environmental Center with walkways and bike paths has been suggested. This project would cost \$161,000 and could be funded under

the Community Development Block Grant Program of the U.S. Dept. of Housing and Urban Development.

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THE TULLYTOWN BOROUGH RECREATION PLAN - for Tullytown Borough, Bucks County, PA by Tredinnick/Waetzman Associates

The borough of Tullytown consists of an area of approximately two square miles located at the western end of the "big bend" of the Delaware River. This is midway between Burlington and Newbold Islands, in Lower Bucks County. The borough is divided into three planning areas: Historic Tullytown, Levittown, and the Warner property.

Historic Tullytown runs along Main Street from south of Route 13 to Franklin Cove and Van Sciver Lake. Much of this area is residential, with 30% of the dwelling units in the area multi-family units. The Levittown portion includes all of Tullytown north of Route 13. Living in this area are many of the workers from U.S. Steel's Fairless Works in adjacent Falls Township. The Warner property located south of Historic Tullytown, is largely undeveloped and was once the site of extensive sand and gravel quarries, which created several large bodies of water such as Franklin Cove and Van Sciver Lake.

At present, Tullytown has a serious deficiency in terms of municipally owned parkland. Borough Park

is the only existing public recreational facility. It is a two-acre tract leased by the borough from the Warner Company. Although there are a number of other recreational facilities which are operated privately, including the Walt Disney School, the Levittown Public Recreational Association, Levittown Lakes, Roosevelt State Park and the Penn Warner Club, there are still not enough playgrounds, ballfields, picnic areas and water access areas for boating and swimming for the population.

Tullytown residents were surveyed by the Bucks County Planning Commission and the League of Women Voters of Pennsylvania to determine demand for types of recreational activities in the area. Picnic areas, hiking trails, playgrounds, tennis courts, swimming facilities and bike trails were the most requested facilities. Interest was also expressed in arts and crafts centers and concert programs. Although there was a strong demand for additional recreational facilities in Tullytown, residents were concerned that providing more services would result in higher taxes.

Interviews with local officials determined that the borough cannot afford additional recreational facilities without either grants or long-term borrowing. A series of short-range proposals, to be accomplished in two to five years at relatively low expense, as well as a package of more costly long-range recommendations was formulated. Short-range recommendations included:

- purchase or long-term lease of Borough Park and provision of additional playground, picnic and basketball equipment in the park
- a trail system along the Delaware Canal for biking and fishing
- provision of parks and waterfront access as future residential development occurs
- better use of existing nearby facilities such as swimming pools.

A long-range recommendation was to expand Borough Park and develop a Borough Civic Center for concerts and local events at an estimated cost of \$150,000.

Funding for the improvements listed in the plan could be provided from several sources. The borough would consider federal grants-in-aid as part of the coastal energy impact program, coastal planning grants, the community development block grants, Land and Water Conservation funds, or general revenue-sharing funds. Tullytown may also obtain financial assistance from the Grundy Foundation, a benevolent trust established to improve the quality of life in the Lower Bucks County area.

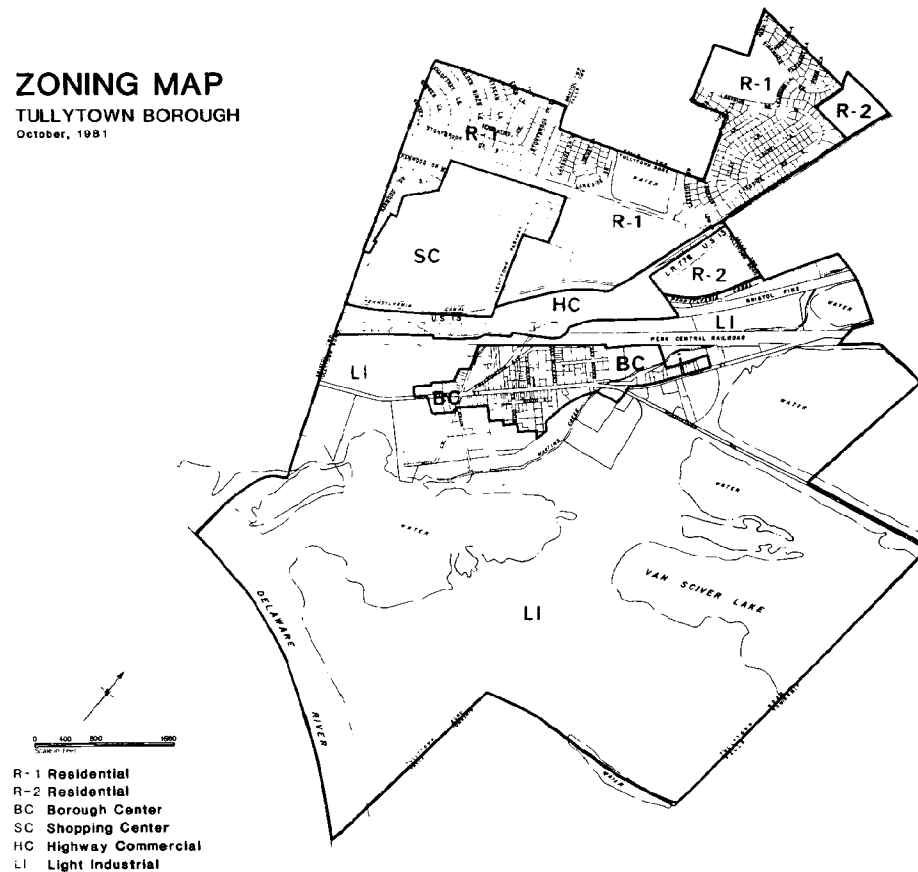
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PROPOSED ZONING ORDINANCE AMENDMENTS - for Tullytown Borough, Bucks County, PA by Bucks County Planning Commission and Tullytown Borough Planning Commission

Tullytown Borough in Bucks County contains 1300 acres and borders the Delaware River. More than half of the Borough is undeveloped or vacant. The 1200 residents live chiefly in the area north of Main Street which parallels U.S. Route 13.

The Tullytown Borough Planning Commission, assisted by the Bucks County Planning Commission, has proposed a series of zoning ordinance amendments for consideration by the Borough Council and the citizens of Tullytown. These proposals, which are

ZONING MAP
TULLYTOWN BOROUGH
October, 1981



believed to be necessary to help improve the quality of life in the borough, represent changes in community goals, land use and dimensional requirements, and zoning districts. They include:

- community goals and objectives - Serving as a framework for municipal decision-making and policy development in the borough, future growth and development would be coordinated with public services planning. Housing for people of all income levels as well as preservation of existing historic residences would be encouraged. A variety of compatible commercial and industrial uses should be sought as a means of providing employment and generating tax revenues. Upgrading the existing Levittown Shopping Center is strongly urged. Environmental and recreational opportunities would be provided by establishing access to the Delaware River and requiring open spaces along with new developments.
- use regulations -- Providing regulations for land use in residential, institutional and recreational, business and commercial, transportation, utility, and industrial development districts.
- buffer yard -- Buffering with trees and plants to create a visual and/or physical barrier between conflicting land uses would be required between all

land developments and along existing streets.

- signs and parking -- Conditions under which signs would be permitted in the Highway Commercial District are explicitly stated. Off-street parking of approximately two spaces per dwelling unit would be required.
- dimensional requirements -- Minimum and maximum dimensions would be specified for lot sizes, building heights, density, percent impervious surfaces, and percent open space for each land use in the proposed zoning ordinance.

17

FALLS TOWNSHIP WATERFRONT RECREATION STUDY - for Falls Township, Bucks County, PA by Uni-plan and Economics Research Associates

Falls Township has 14 miles of frontage on the Delaware River and 28 miles of lake frontage, but only one public marina. Falls Township supervisors decided to acquire additional riverfront land and arranged for a feasibility study of using this land for public recreation.

Falls Township lies at an elbow of the Delaware River at the eastern tip of Bucks County. It contains nearly 10% of the county population and includes the residential development of Levittown. U.S. Steel's Fairless Works and the Warner Company's

slag operation are among the major industries in the area.

Boat owners in Falls Township must presently tow their boats to either the New Jersey coast or the Delaware Bay. They have expressed a desire to be able to put their boats into the Delaware somewhere near their homes and a local marina would serve many citizens.

Two sites were considered for development of a marina, with facilities for fishing and picnicking. The Lauderback Road site is a 10.6 acre panhandle facing the river and the Pennsbury Manor site is a 15-acre rectangle with a 1,000 foot frontage along the river, situated several hundred yards downstream of the Lauderback site.

Pennsbury Manor was found to be superior as it is adjacent to the 40-acre Pennsbury Manor State Park, which is currently underutilized. This existing park has parking, restrooms and picnic facilities already in place, which could be shared by users of the marina. There is also 50% more usable land at the Pennsbury location and 45% more waterfront than at the Lauderback acreage.

Based on a survey of marinas in the upper Delaware River, it was found that a seasonal marina facility at the Pennsbury Manor site was most feasible. The facility should be designed to accommodate 100 to 150 slips, along with a boat ramp and sufficient parking for cars and boat trailers. It was further recommended

that a small service facility be provided which would include restrooms, snack bar, vending machines, administrative offices and storage space.

The total cost of this project is about \$3,000,000, and would be carried out in three phases. The first provides for the initial development of the park into a recreation area with no boating facilities. The second phase would add a boat launching ramp and parking area for boat trailers. The final phase represents the full development of the riverfront park to include a 150 slip marina and supporting facilities. The total annual operating budget of the park is estimated at \$80,000.

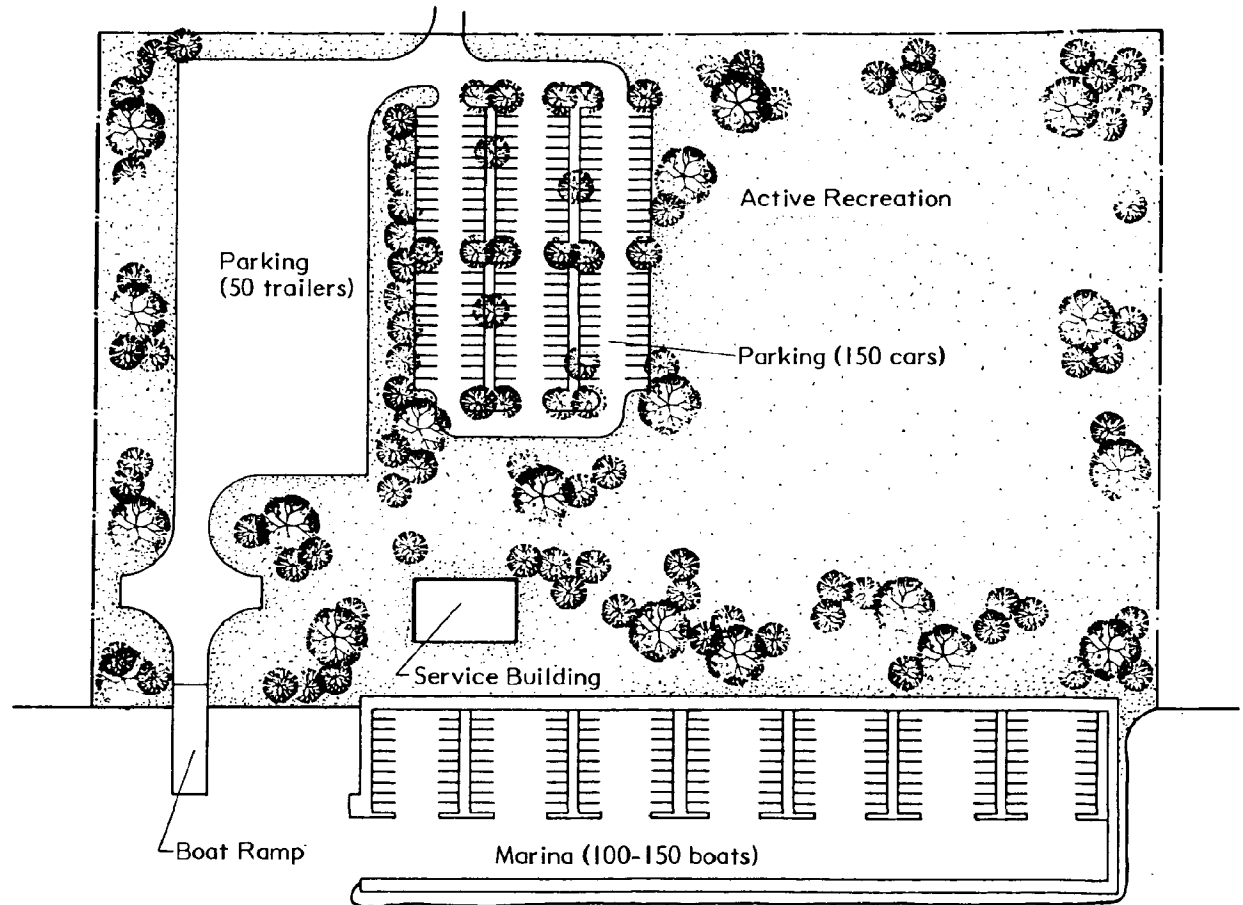
In the judgment of the consultant, the park would be best served by public management with a private concession responsible for gas and supply sales. Funding from the township, Pennsylvania Fish Commission, or the federal government would be necessary to make the project a reality.

18

WILLIAMSON PARK EXPANSION PROJECT - for Morrisville Borough, Bucks County, PA by Direction Associates, Inc.

Williamson Park is located in Morrisville Borough, Bucks County directly across from Trenton, New Jersey. The park has a total potential land area of 40.8 acres, although only five acres have been developed for swimming, tennis, basketball, baseball and other recreational opportunities.

Phase 3 Plan for Falls Township



The Borough has recently obtained ownership of 13.4 acres of vacant land adjacent to the Manor Park Elementary School and Municipal Annex, which could be used to provide additional recreation facilities for Morris-

ville residents. The other portion of the site (east of Delmorr Avenue) is also owned by the Borough and consists of about 1000 feet of thickly shrubbed and wooded frontage on the Delaware River, and is presently vacant.

The development plan recommended that both new sites be developed for recreational facilities and connected by pedestrian and bicycle paths. A boat dock, parking area, and picnic grounds are proposed for the Delmorr Avenue location. Both active and passive recreational facilities are recommended for the Manor Park area, including benches and shuffleboard near the Senior Citizens' Center in the western portion. Baseball and basketball facilities would be provided in the south and east, and a tot lot in the northern part of the site. Development of the two park sites will cost approximately \$460,000, and would be accomplished in phases.

19

AN ANALYSIS OF SOIL EROSION, SEDIMENTATION AND STORM-WATER CONTROL IN COASTAL COMMUNITIES - for Bucks County, PA by Bucks County Conservation District

Six municipalities in Bucks County which border on the Delaware River and lie in the Pennsylvania Coastal Zone were the site for this project. They are: Falls, Bristol, and Bensalem townships; and Tullytown, Bristol, and Morrisville boroughs.

The study analyzed erosion and sediment control requirements of the six municipalities, to determine how these requirements are administered and to make recommendations on how the requirements might be improved. The Bucks County Conservation District, serving as consultant for the

study, looked at the local zoning ordinances, subdivision and land development ordinances. Local rules and regulations for controlling erosion and sedimentation appeared to be adequate when implemented correctly by local governments. In each municipality, the review procedure for land use, erosion and sedimentation plans is examined first by the municipal engineer, then by the Bucks County Planning Commission and, finally, by the Bucks County Conservation District.

The study suggested a pre-construction conference for the purpose of reviewing proposed project

narratives, construction sequences, and suggested recommendations. This would serve to establish an open line of communication between all interested parties, and afford the opportunity to assure that recommended construction sequences would be followed. The District also felt that there is a definite need for an information and education program for developers, contractors, and earth movers, to make them aware that the implementation of soil erosion and sediment control measures can save them money in the long run. Convincing business concerns that it would be more profitable for them to comply with existing regulations would result in

Aerial View of Lower Bucks County Coastal Zone



fewer violations of the Clean Streams Law and local ordinances.

The District felt that citizen participation in erosion, sedimentation, and stormwater plans should definitely be encouraged.

20

RESOURCE PROTECTION PLAN FOR THE PENNSYLVANIA/DELAWARE RIVER COASTAL ZONE by Cee Jay Frederick Associates in Association with John Milner Associates

The Pennsylvania/Delaware River Coastal Zone Cultural Resource Protection Plan, developed under the direction of the Pennsylvania Historical and Museum Commission, has been designed as a guidebook to be used by persons and organizations concerned with the identification and preservation of historic and archaeological resources. It provides its users with a clear and systematic approach to identifying, evaluating, and protecting historic and prehistoric resources, both above and below ground level. The plan can be a framework for decision-making relative to development and work being done in the field. "Cultural resources" may exist as individual sites, structures, or districts, encompassing several or hundreds of acres.

The Resource Protection Plan is organized to provide the user with a comprehensive understanding of and ready access to a two step process:

- the determination of historic/prehistoric significance through resource identification and evaluation

- development of a planning strategy to preserve, protect, or operate these resources

Two land use development trends may have significant implications for historic preservation in the coastal zone:

- the conversion of large estates and land holdings in Bucks County and the extreme northeastern section of Philadelphia County to more intensive residential and industrial uses
- the decline and abandonment of sites and facilities within the

more industrial areas of Delaware and Philadelphia counties.

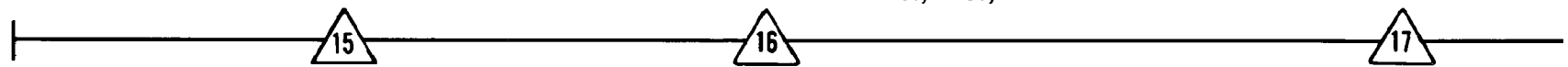
Generally speaking, Resource Protection Planning in the Pennsylvania/Delaware River Coastal Zone is at an early stage of development. Although over 240 prehistoric resources were inventoried during the conduct of this study, these resources have not been consistently documented and even fewer have been evaluated for their significant prehistoric or historic value. The existing record of historic resources varies with regard to the extent of documentation. Resources listed on the National Register are the most thoroughly documented, both historically and architecturally.

Fruithouse Wharf - 1869 Italianate Riverfront Mansion in Bristol Borough

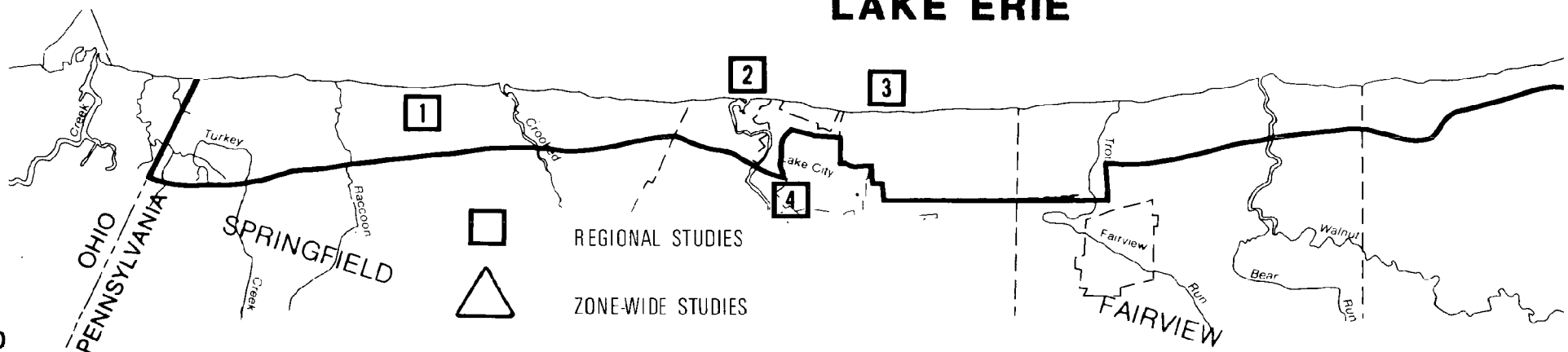


- 1 Eagley Park Site Development and Erosion Abatement Plan - for Springfield Township, Erie County
- 2 Elk Creek Public Access Feasibility Study - for Girard Township, Erie County, PA
- 3 Elk Creek Stabilization and Rechannelization Study - for Lake City Borough, Erie County
- 4 Storm Water Management Plan of Lake Erie and Elk Creek Water Sheds - for Erie County Department of Planning and Department of Environmental Resources
- 5 Feasibility Study for Bikeways In and Adjacent to William L. Scott County Park - for Erie County Department of Planning

- 6 Feasibility Study for an Amphitheater in William L. Scott County Park -for Erie County Department of Planning
- 7 Presque Isle Environmental Education Program - for Pennsylvania Bureau of State Parks and Department of Environmental Resources
- 8 Environmental Impact Statement and Design Study Interim Report on Bayfront-Port Access Road - for Department of Environmental Resources, Coastal Zone Management and City of Erie
- 9 Coastal Zone Development Plan: West Bayfront Area of the City of Erie
- 10 Revitalization Plan for Bayfront Area of the City of Erie by Bayfront Neighborhood Action Team Organization, Inc., Erie, PA



LAKE ERIE



11

Summer Environmental Awareness Program 1981 by Bayfront Neighborhood Action Team Organization, Inc., Erie, PA

12

Diamond National Building Feasibility Study - for Erie County Department of Planning

13

Coastal Erosion Inventory - for Harbor Creek Township, Erie County

14

Twenty Mile Creek Public Access Feasibility Study - for North East Township, PA

15

Commercial Dredging in the Pennsylvania Waters of Lake Erie - for Lake Erie Institute of Science

16

Angling and Boating Use and Angler Harvest Census of Lake Erie and Presque Isle Bay, Phase I - for Department of Environmental Resources and Coastal Zone Management

17

A Geotechnical Investigation of the Coastal Bluffs of Erie County, PA

18

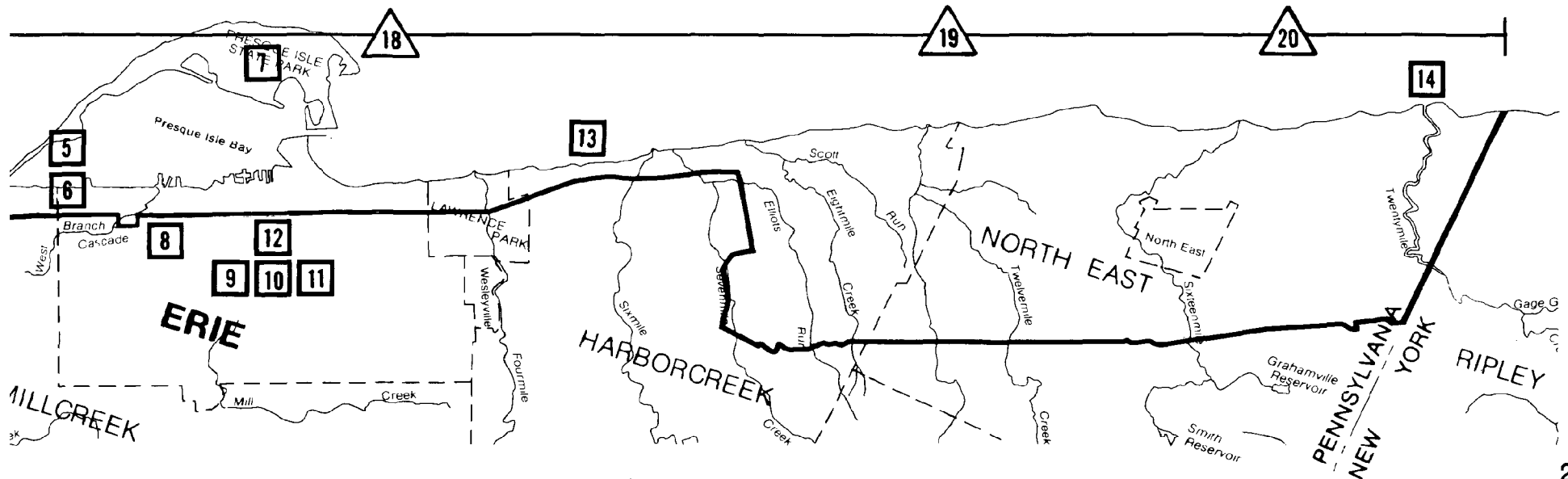
Low Cost Shore Protection: Design Criteria, Adverse Impacts, Expected Results and Model Municipal Ordinance - for Lake Erie Institute of Marine Science

19

Bluff Setback Regulations for Eight Lake Erie Communities

20

Coastal Zone Management Workshops



EAGLEY PARK SITE DEVELOPMENT
AND EROSION ABATEMENT PLAN -
for Springfield Township, Erie County
by Northwest Engineering, Inc.

Eagley Park is a site of approximately ten acres located in Springfield Township on the shore of Lake Erie. It contains wooded vegetation in the southwestern quadrant plus grassy areas in the remainder of the property. A survey of topographic contours shows a very steep bluff in the northwest and a smaller bluff in the northeastern portion of the property, leading down to the beach along Lake Erie. The topography from Lake Erie rises slightly across the beach to the bluff and then rises dramatically onto a grassy plateau. Half-way into the park, a wooded hillside extends to the southernmost park boundary at Eagley Road. Existing park facilities include access roads and parking, restrooms, a pavilion, some playground apparatus, a sea wall, and other facilities. The park contains no floodplain or wetland areas, except the beach area along the Lake Erie shoreline.

A recreational site feasibility plan was prepared and Springfield Township residents were surveyed to determine desired recreational facilities. Residents surveyed indicated a preference for swimming, bicycling, physical fitness, ice skating, music concerts, roller skating, tennis and volleyball. Additional facilities, especially for teenagers, were requested.

A preliminary engineering analysis for controlling beachfront and bluff erosion within the park was also developed. The silty sand of the 30 foot high bluff has been subject to continuing erosion over the years from wind, rain, and wind-driven spray. In addition, the park area on top of the bluff experiences storm drainage problems. Stormwater is currently discharged down over the face of the bluff because of drainage problems. Storm jetties constructed northward from the shore out into the lake water have been worn away and are no longer as effective as they once were.

A schedule of necessary erosion control improvements and cost estimates was developed. There are two phases in the proposed development plan for Eagley Park. Phase I (one to five years) would involve the construction of an informal picnic area, additional playground apparatus and site facilities, such as fencing and access roadwork. Erosion control facilities would include methods to adequately drain the park as well as to control beachfront erosion.

Two to three percent of the cost of improvements would be required for annual operation and maintenance of recreational facilities. Applying such factors, the proposed development in Phase I would require an annual operation and maintenance cost of \$4,000 to \$5,000.

The Phase II development (six to 15 years) is a considerably more ex-

pensive plan. It consists of construction of a gazebo to be used as a sheltered picnic facility and bandstand, the rehabilitation of the existing picnic shelter, and construction of bathhouse and beach development facilities.

Upon completion of both phases, operation and maintenance costs were estimated at \$15,000 per year.

ELK CREEK PUBLIC ACCESS FEASIBILITY STUDY - for Girard Township, Erie County, PA by D. A. Johnson & Associates

Elk Creek is the largest tributary to Lake Erie in Pennsylvania and is located about halfway between the city of Erie and the Ohio border. The site has been studied for many years as a potential recreation area with access to the Lake. High bluffs and private ownership limit public access to Lake Erie over much of the Pennsylvania shoreline.

The study area includes approximately 230 acres of the Elk Creek Valley lying between U.S. Route 5 and Lake Erie. It includes land in private ownership on the east side of the Creek and a tract on the west side belonging to Pennsylvania Electric Company. Much of the area is heavily wooded, especially on the west side of the creek. There are approximately 50 dwellings on the east side floodplain and lake escarpment, most of them in seasonal use.

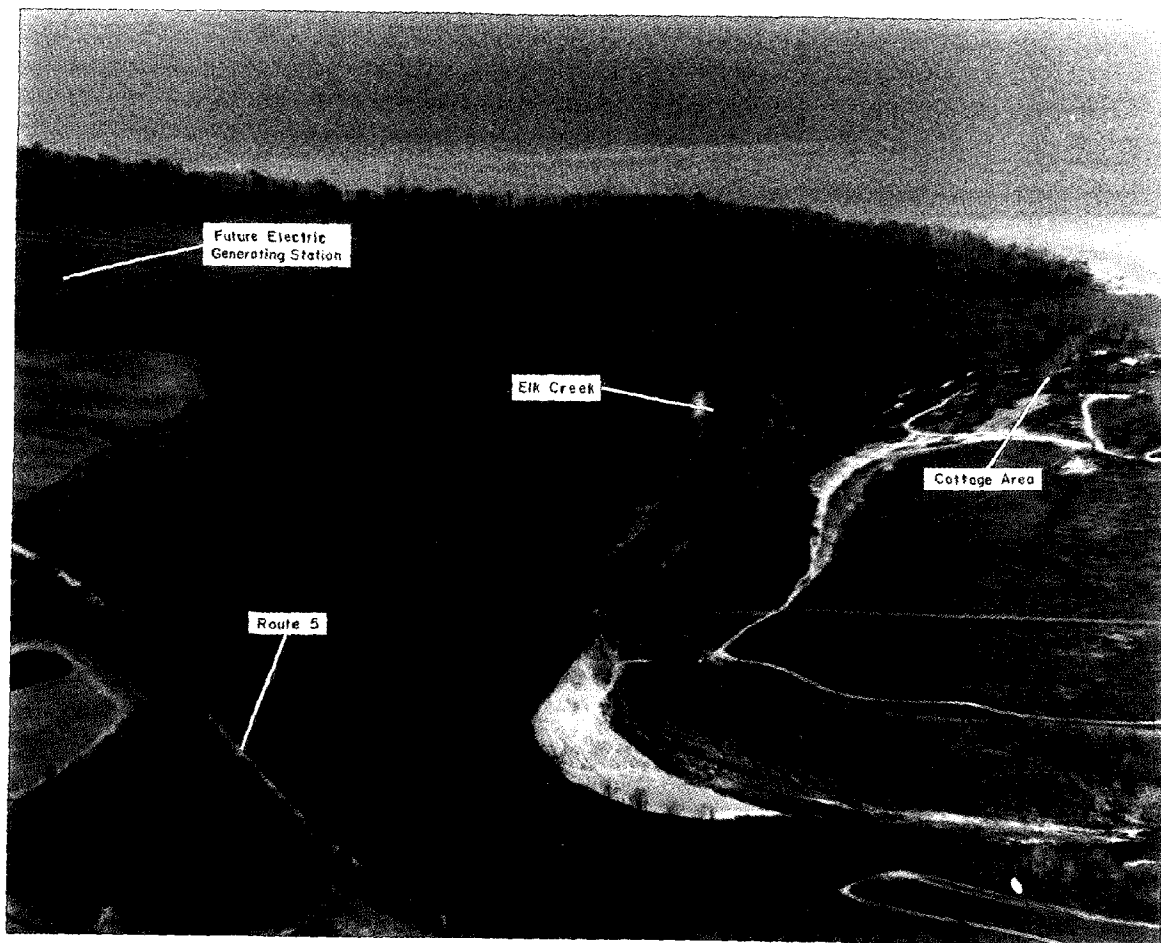
The consultant recommended that land owned by the utility company on the west side be selected for a recreational area. Specific improvements to make the site usable would be made in stages. The utility company leased its property to Girard Township for an initial 25 year period. Stage 1 has been completed and there is now an entrance road and parking area off Route 5. There is an 800 foot hiking trail, four picnic tables, two barbeque grills, a park sign, and refuse receptacles.

Future development includes an access road to an interior parking area, two sets of comfort facilities, additional hiking trails and a potable water supply. A boat launching ramp into the creek, near the mouth is planned, with adjacent stream bank protection. A final stage might include channel improvements for the benefit of small recreation boats.

3

ELK CREEK STABILIZATION AND RECHANNELIZATION STUDY - for Lake City Borough, Erie County by Northwest Engineering, Inc.

The study area is the eastern bank of Elk Creek in Lake City Borough, near the municipal wastewater treatment plant and the abandoned Lake City Borough dump site.



View from south of Elk Creek

For the past few years, there has been a continual erosion problem in the area. Several sections of the treatment plant's outfall pipe are

undermined and there is a slumping of the abandoned dump due to wearing down of the stream's eastern bank. The deposit of eroded material on the

western bank has caused the formation of a gravel bar which compounds the problem. If present erosion is allowed to continue, the treatment plant itself will be endangered.

The study plan calls for the stabilization of approximately 580 feet of the stream bank from the bridge headwall upstream to a point above the treatment plant outfall pipe. This would protect the outfall pipe, the abandoned dump site, and the bridge headwall. Protection would consist of the construction of a two to one sloped bank on which a nine-inch thick revetment mattress would be built. (A revetment mattress is a wide rectangular basket made of wire mesh which is filled with three or four inch stone.) This would offer protection up to a height of approximately two feet above the 100-year flood elevation. The total cost for the project would be \$103,000 and a grant from the federal or state government would be the most likely funding source.

4

STORM WATER MANAGEMENT
PLAN OF LAKE ERIE AND ELK
CREEK WATER SHEDS - for Erie
County Department of Planning and
Department of Environmental Re-
sources by Northwest Institute of Re-
search - Woodruff, Inc.

This report is a 14-volume series which deals with the application of a pilot stormwater management plan in

various subbasins within the Lake Erie and Elk Creek watersheds. In accordance with the Stormwater Management Act, the fundamental premise of this plan is that serious efforts must be made to preserve and restore the flood-carrying capacity of the streams and creeks which empty into Lake Erie. Methods used to achieve this goal must also serve to eliminate or significantly reduce localized flooding which often results from land development.

The first volume is a technical document describing the methodology used in the development of the plan and a background description of the information in the remaining 13 subbasins stormwater management plan reports. Each of the 13 subbasin reports describes existing land use and stormwater runoff conditions in the watershed and calculates runoff and water channel carrying capacity requirements given future projected land use. The reports present a set of criteria and standards for stormwater management based on future needs, and recommend one or more alternative stormwater management methods suited to the needs, present and future, of each watershed analyzed.

Plan implementation will take place at the local level through adoption of appropriate ordinances or amendments to existing regulations. The Lake Erie and Elk Creek Stormwater Management Plan has received considerable input from the Watershed Advisory Committee, and it is recommended that this group continue to monitor the effectiveness of the plan.

5

FEASIBILITY STUDY FOR BIKEWAYS
IN AND ADJACENT TO WILLIAM L.
SCOTT COUNTY PARK - for Erie
County Department of Planning by
Albert L. Massey, Landscape Architect

William L. Scott County Park consists of 108 acres located in Millcreek Township on the shores of Presque Isle Bay adjacent to Presque Isle State Park. Although Scott Park does not abut any major highway, it is readily accessible to all major roads in the county, either by West 6th Street or Peninsula Drive, and is in the heart of the area's most popular tourist area. Nearby Presque Isle Park had 4.6 million visitors during 1980, many of whom rode their bikes to the park.

There is presently the start of a bikeway along West 6th Street, which has been in existence for several years. Beginning at the City-Millcreek Township boundary line and running west along West 6th is a shared right-of-way bikeway. The shoulders of West 6th were paved and signed for "no parking" and "bikeway--one way" as the area is utilized by many cyclists. The existence of bikeways in William L. Scott County Park and a connector bikeway from Scott Park to Presque Isle will give bicyclists alternative routes, as well as provide a safer ride to Presque Isle State Park. The State Park is trying to separate the bikers from the vehicular traffic within the Park at this time.

This study sought the best way to construct bikeways both in Scott Park and between Scott Park and Presque Isle State Park.

A 90 foot high escarpment exists along Presque Isle Bay in Scott County Park. Since the slope of the escarpment is extremely steep, a bikeway is not feasible. Three options for breaching the escarpment were considered:

- Peninsula Drive
- the sanitary sewer easement of the Millcreek Sewer Authority
- Sommerheim Drive

An analysis of each alignment showed that Peninsula Drive would probably be the most direct, accessible and secure route. It is expensive as proposed; however, no private property would need to be purchased. This would keep costs competitive with other choices.

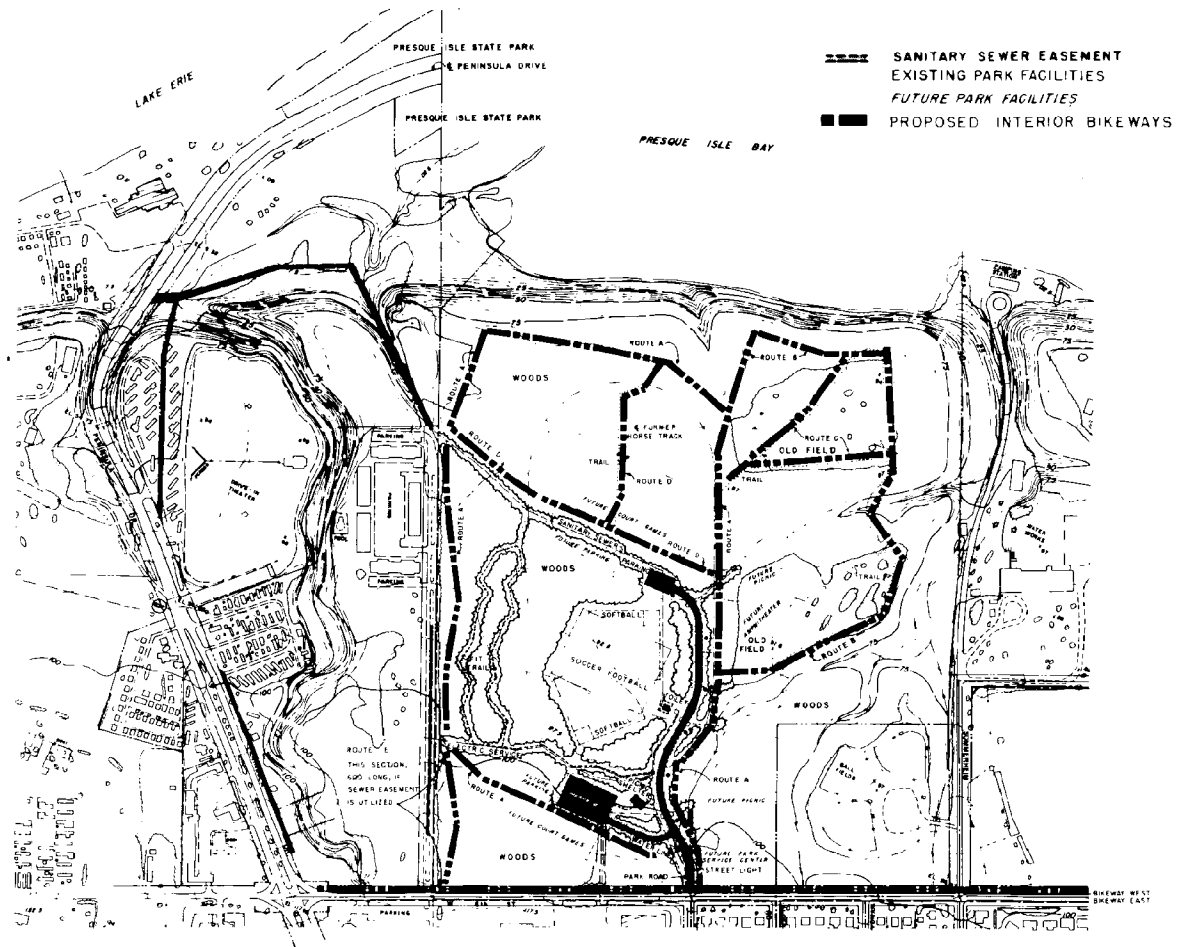
The study assessed impacts of interior bikeways in Scott Park and connector bikeways between Scott Park and Presque Isle State Park. Within Scott Park, bikeways could be an environmental asset, serving as fire breaks or trails to confine fires within park boundaries.

Bike trails would also provide openings or edges for wildlife. The major benefit of construction of a bikeway to Presque Isle Park would be the elimination of possible conflicts between motor vehicles and bicyclists,

creating a safer situation for both riders. If the bikeway were constructed along Peninsula Drive, that reconstruction work might encourage adjacent property owners to upgrade

the use of the Peninsula Drive frontage, making the area more visually attractive. Construction of a bikeway could also correct existing soil erosion problems. Finally, the existence of a

Proposed interior bikeways in Scott Park



safe bikeway could encourage more people to visit Presque Isle Park under pedal power rather than by a motor vehicle, thus saving on gasoline consumption.

6

FEASIBILITY STUDY FOR AN AMPHITHEATER IN WILLIAM L. SCOTT COUNTY PARK - for Erie County Department of Planning by Albert L. Massey, Landscape Architect

William L. Scott County Park is located in Millcreek Township on the shores of Presque Isle Bay and is adjacent to Presque Isle State Park. The 108-acre park is in the heart of the most popular tourist area in Erie County, offering soccer and softball fields, a hiking trail, and a limited number of well-used picnic tables.

The addition of an amphitheater was found to be compatible with existing and proposed recreational facilities in Scott Park. The best location would be east of the entrance drive, with parking facilities for 300 - 400 cars. A survey of potential users showed that the stage must accommodate 40 persons comfortably and 70 persons in crowded conditions. The average audience would be between 600 and 1200 persons with potential crowds of up to 4,000 people. The amphitheater would be used between mid-May and mid-September approximately two to four times per week, and is expected to cost between \$250,000 and \$400,000.

7

PRESQUE ISLE ENVIRONMENTAL EDUCATION PROGRAM - for Pennsylvania Bureau of State Parks and Department of Environmental Education and Interpretive Section of Pennsylvania Bureau of State Parks

The Coastal Zone Management Office made \$30,000 in funds available for an environmental education program for Presque Isle State Park. The purpose of the project was to develop exhibits on the geologic formation of the peninsula, the changing nature of the peninsula and the coastal zone management practices used to protect the peninsula.

Major exhibits which were designed and constructed include:

- a large kiosk at the nature center showing the natural and man-made processes shaping Presque Isle
- four smaller kiosks located at the Second Bayside Parking Lot, the Lily Pond, Perry Monument and Sunset Pond. These show fish life, energy conversion, wave action and breakwaters, and Lake Erie
- a nature center mini-trail with five stations.

In addition to the exhibits, a slide orientation program and interpretive brochure were developed. They describe the area's historic background, botanical and geological evolution, and bird and animal life.

8

ENVIRONMENTAL IMPACT STATEMENT AND DESIGN STUDY INTERIM REPORT ON BAYFRONT-PORT ACCESS ROAD - for Department of Environmental Resources, Coastal Zone Management and City of Erie by Urban Engineers, Inc.

This report represents the first three months' work in preparation of a comprehensive Design Study and Environmental Impact Statement for the Erie Bayfront-Port Access Road, Legislative Route 1003, Section A00. The project covers approximately five miles, extending from West 12th Street at Interstate 79, paralleling the Conrail tracks along the Bayfront, to a terminus in the vicinity of East Lake Road. Within the defined corridor, alternate route locations are considered.

A primary element of the Interim Report was a study of present and future average daily traffic volumes. Alternate intersections and parking facilities were also examined for their impact on traffic flow.

The basic conclusion of the study was that the Bayfront-Port Access Road is definitely needed as a vital

link between major interstate highways, port and industrial areas. Heavy truck traffic going to the waterfront will not have to use local streets.

In considering alternative locations and intersection connections for the Bayfront Highway, various activity centers (traffic generators) were studied. These are port facilities, historical and industrial sites, recreational areas, the downtown business center, and main road cross traffic.

9

COASTAL ZONE DEVELOPMENT PLAN: WEST BAYFRONT AREA OF THE CITY OF ERIE by Bayfront Neighborhood Action Team Organiza- tion, Inc.

The project area consists of about 255 acres located in the city of Erie. It is bounded on the east by Peach Street, on the south by Sixth Street, Cranberry to the west, and Presque Isle Bay to the north. The area is essentially two strips of land paralleling the water. One is a low-lying portion containing docks, industrial activities, Port of Erie facilities, and major utility plants and rail lines. Atop the waterfront bluff south of the bay, the second area is primarily for residential use and development. The waterfront and surrounding neighborhood area is picturesque and contains many historic landmarks.

The Bayfront Neighborhood Action Team Organization (NATO) Martin Luther King Center is a minority-founded non-profit service agency. In undertaking this study, NATO conducted an analysis of demographic, socio-economic and overall neighborhood characteristics of the Bayfront area. Short and long-range strategies were proposed. These included a five-year Action Plan dealing with:

- public access to the waterfront
- sites of historical value
- physical improvements
- economic development
- cultural and institutional development

A block by block survey of residents of the area showed that although there is a high occupancy rate of existing structures, renovation of neighborhood buildings and homes is much needed. Some street and sidewalk repairs are also necessary, particularly on Second Street between Cherry and Liberty.

Residents of the area worked with NATO to suggest a series of short-range actions to improve the neighborhood. These were the Bayfront Mini-Mall Project and park improvement projects for passive recreational needs in Perry Armada Park and Louis J. Tullio Park. The

long-range plan for the west Bayfront area is composed of several major projects. Residents proposed a bicycle trail to improve waterfront access, restoration of historic sites, provision of additional elderly and family housing, construction of a nursing home, construction of a culture house, and housing renovation.

In its study, NATO recommended a strong commitment toward historic preservation in the Bayfront neighborhood and included a detailed inventory of historic sites, their classifications and locations.

10

REVITALIZATION PLAN FOR BAY- FRONT AREA OF THE CITY OF ERIE by Bayfront Neighborhood Action Team Organization, Inc., Erie, PA

The Bayfront Area is located within the northern portion of the city of Erie and fronts on Presque Isle Bay and Lake Erie. The waterfront comprises about three miles, or 60% of Erie City's total waterfront, largely consisting of two strips of land paralleling the water. The first is a low portion containing docks, industry, utility plants, and rail lines: the waterfront bluff and the southern area contains approximately 100 city blocks which are 90% residential.

In order to develop a revitalization plan, many facets of the Bay-

front area must be considered. These include demographic characteristics, employment and public access to the waterfront. This information provided a base for a five-year action plan, authorized by the city and county of Erie through the Pennsylvania Department of Environmental Resources (DER). Five general areas of improvement were identified:

- areas for public access to the waterfront with active and passive recreational activities (park revitalization)
- sites of historical value with preservation and restoration activities
- physical improvements in transportation, streets and housing
- economic development through business revitalization
- cultural and institutional development of historic sites and structures

The Bayfront area could be developed as a focal point of the city of Erie. This would take advantage of the rich historical lore associated with Erie's waterfront and the inherent scenic vistas and cultural attractions. Neighborhood revitalization is a major concern and a Bayfront Neighborhood Action Team Organization (NATO) provides a community center which serves to strengthen local goals. The main objective is to develop a comprehensive strategy for physical, eco-

nomie, and social improvements.

The Martin Luther King Center has been responsible for construction and initiation of major neighborhood improvements. From 1969 to 1979, projects have been identified and include recreational parks, renovations of historic sites, and new parking facilities. Neighborhood residents participate in the development of the city planning efforts through public meetings and provide advice as needed. In turn, city officials, through the Mayor's office, provide input into neighborhood strategies through members who serve on the Bayfront Urban Action Council.

11

SUMMER ENVIRONMENTAL AWARENESS PROGRAM 1981 by Bayfront Neighborhood Action Team Organization, Inc., Erie, PA

An environmental awareness program for students enrolled in a Neighborhood Youth Corps Work Experience was held during the summer of 1981. It was conducted by the Lake Erie Marine Science Center in conjunction with the Martin Luther King Center and the Greater Erie Community Action Committee. The program theme was "Energy Impacts upon Our

Students at Environmental Awareness Program

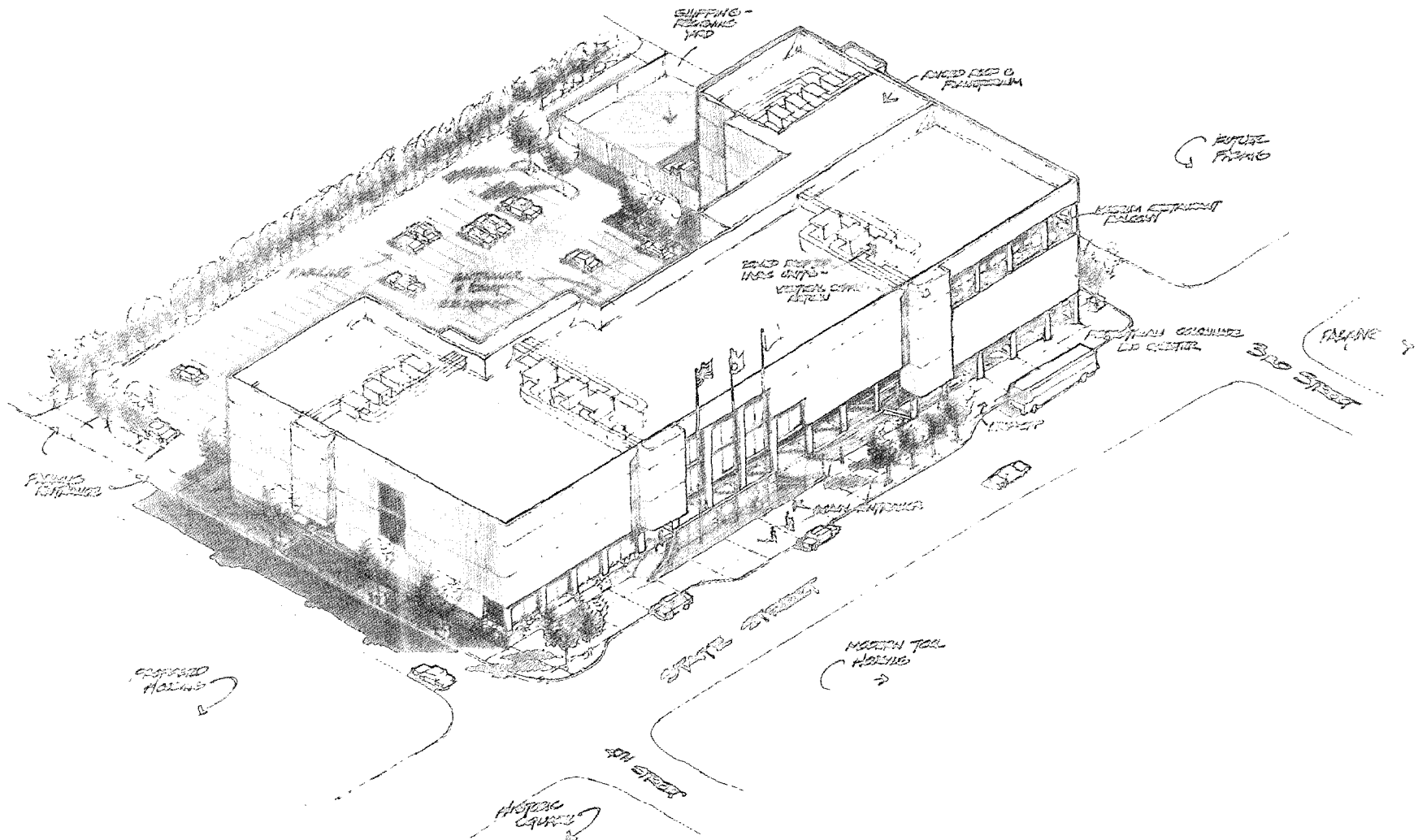


Environment" and a total of 83 students, ages 10 to 17, participated. The workshops were held from June 22 to August 14, with projects including Career Day, a tour of the Hammermill Paper Company, archaeology study,

coastal erosion problems and biology in ponds. Specialists from Gannon University, the John F. Kennedy Center and the Booker T. Washington Center worked with the students.

Judged a success by students, parents, and instructors, the program brought environmental and natural resources awareness into the lives of the youngsters in a realistic and meaningful manner.

Drawing of proposed alterations for Diamond National Bank



DIAMOND NATIONAL BUILDING
FEASIBILITY STUDY - for Erie
County Department of Planning by
Weber Murphy Architects, Inc.

The Diamond National Building is located on the west side of State Street between Third and Fourth Streets in downtown Erie.

The purpose of this study was to determine whether this building could be adapted for use as a Public Library and Cultural Center. The specific requirements for occupants of the library were considered, including adults, children and staff. Housing for audio-visual services, reference facilities, an auditorium and meeting rooms were needed. The proposed museum part of the building would now contain exhibition facilities as well as a gift shop, restaurant, and theater/lecture areas.

A structural analysis of the existing Diamond National Building conducted by the engineering firm of Sonntag-Amthor revealed that the building was in sound condition. Total conversion costs, including new construction and parking facilities was estimated between \$7,300,000 and \$9,700,000.

A financial assessment of the project was conducted by David Van Amburg and Associates, Inc. Available federal, state and private funds were analyzed, and a purchase option arrangement from a private developer was strongly recommended.

The study concluded that the Diamond National project would have a positive impact on both the cultural and economic growth of the city of Erie by providing a new cultural center and adding to neighborhood revitalization efforts.

COASTAL EROSION INVENTORY -
for Harbor Creek Township, Erie
County by Northwest Engineering, Inc.

An inventory was taken of the exact nature of the shoreline in Harborcreek Township and the particular erosion processes at work. This shoreline consists of bluffs, which are composed of glacial deposits which are especially susceptible to erosion. The bluffs range from less than ten feet to over 100 feet, and average 50 to 70 feet. The bluffs are composed of distinct layers of different geologic materials, and depending on their individual make-up, erodibility varies.

The procedure for inventory began with a physical survey, highlighting items of interest and important features. The shoreline was also surveyed for coastal erosion problems, with assistance provided by various agencies. A check list was devised to include the type of bluff, the bluff profile, and types of erosion present. Specific attention was given to hazard identification. The classification system included: high hazard areas, endangered structures and moderate hazard areas. The results designated

16 areas in Harborcreek Township as high hazard, 12 as moderate hazard areas, and 20 as endangered structures.

Recommendations for erosion control would begin with a shore protection program encouraging corrective action for land protection. Specific solutions for Harborcreek should include rip-rap or gabions to retard the erosion. Groundwater seepage can be reduced by installation of french drains or reduction of slope by regrading. Harborcreek has adopted a setback ordinance to enforce minimum setback distances for future commercial, industrial and residential development.

TWENTY MILE CREEK PUBLIC
ACCESS FEASIBILITY STUDY -for
North East Township, PA by Hill & Hill
Engineers, Inc.

The study area is located at the mouth of Twenty Mile Creek, in North East Township. This is approximately 18 miles east of the city of Erie and one mile west of the Pennsylvania-New York State line. The creek originates in the southwest corner of New York and flows through Erie County into Lake Erie. The study area is close to 75 acres in size and is privately owned. There are about three dozen residential units or summer cottages located near the lake front on either side of the creek. The

area is served by an excellent transportation network, which includes I-90, U.S. Route 20, and several state routes. The plain and mouth area formed by Twenty Mile Creek, as it enters Lake Erie, has created a large area of relatively level terrain and beach which is unique to this stretch of shoreline and the Erie County Coastal Zone.

The proposed project would include:

- the acquisition of approximately 36 acres of land adjacent to Twenty Mile Creek and Lake Erie
- stabilization of the banks of Twenty Mile Creek
- construction of an access road, parking lot, and boat launching ramp
- development of a safe, small boat shelter
- installation of sanitary and picnic facilities
- maintenance and preservation of the natural surroundings.

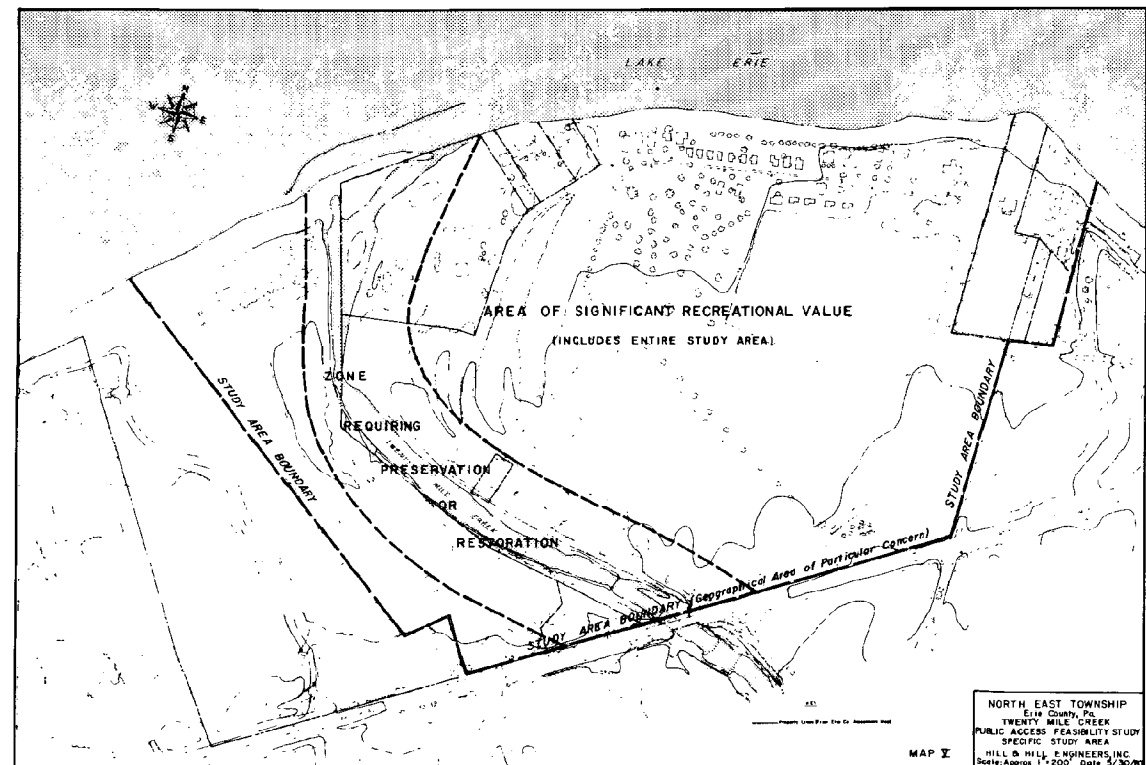
The site improvements could be phased over a five-year period at an estimated cost of \$2,473,200.

This development program would result in significant regional benefits to northwestern Pennsylvania and New York state residents. In addition to the benefits outlined above, the development would provide relief to the other existing access facilities which are experiencing overcrowding.

The study concluded that the development of public access to Lake

Erie at Twenty Mile Creek is both desirable and feasible. It is recommended that the Commonwealth of Pennsylvania, through responsible agencies such as the CZM office and the Pennsylvania Fish Commission, take immediate action to sponsor this project. Local, county, state, and federal cooperation will all be needed if the public is to be provided access to Lake Erie at this site.

Specific study area for Twenty Mile Creek



COMMERCIAL DREDGING IN THE PENNSYLVANIA WATERS OF LAKE ERIE - for Lake Erie Institute for Marine Science by William Nagel and Paul Knuth, Coastal Research Associates, Inc.

This report summarizes the dredging activities of the Erie Sand Steamship Company in Pennsylvania waters of Lake Erie and considers the possible environmental impacts of dredging, including the relationship to erosion on the coastal area.

The Erie Sand Steamship Company has been operating in Pennsylvania since 1888. They currently have seven sand and gravel dredges that work in the lower Great Lakes. In Lake Erie, they are permitted to dredge an area which is two miles by six miles northwest of Presque Isle State Park. The volume of sand dredged, in cubic yards, is recorded by the Erie Sand Steamship Company and supplied to the Pennsylvania Fish Commission each month.

The Erie Sand Steamship Company is currently operating under a five-year permit, issued in 1980. A Pennsylvania Commonwealth law requires that the company pay a royalty to the Pennsylvania Fish Commission for each cubic yard of sand removed. The royalties paid since 1970 total \$520,069.05.



Commercial dredge in Lake Erie

This study concludes:

- there will be no adverse effects to the Pennsylvania shoreline so long as dredging is done to the northwest of the bottom trough separating the Presque Isle platform from the transverse ridge extending to Long Point, Canada
- The Erie Sand Steamship Company dredges outside, but nearby this permitted area
- controls should be placed on the

amounts of sand and gravel the company is permitted to remove

- improved monitoring by regulatory agencies is needed

ANGLING AND BOATING USE AND ANGLER HARVEST CENSUS OF LAKE ERIE AND PRESQUE ISLE BAY, PHASE I - for Department of Environmental Resources and Coastal Zone Management by Pennsylvania Fish Commission

The Pennsylvania Fish Commission began a phased survey on June 1, 1981 to analyze fishing and boating on Lake Erie and Presque Isle Bay. The purpose of the survey was to provide a full year of data on boating use and fishery demands in the study area. This Phase I report provides data through October 1981.

A use and harvest survey enables fisheries managers to determine how many anglers and boaters utilize a given area for recreation, where harvest fishing pressure occurs, and number and sizes of fish harvested by anglers. The field survey consists of two components: instantaneous counts, and angler interviews. During instantaneous counts, the number of anglers and recreational boaters are counted. Between each instantaneous count, anglers are interviewed by survey clerks to determine their rate of success and to gain information on the species, numbers, and sizes of fish which have been caught.

A total of 32 census sites were analyzed with 350 to 750 interviews conducted weekly. The most frequent complaint from boaters was the need for more and better access areas and launch ramps in the study areas.

Phase II of the study will gather angling and boating data for the remainder of the year for the Presque Isle/Lake Erie study area. A report presenting data and analysis of angling and boating use for both phases will be prepared after completion of Phase II.

A GEOTECHNICAL INVESTIGATION
OF THE COASTAL BLUFFS OF ERIE
COUNTY, PA by Paul D. Knuth,
Coastal Research Associates

The purpose of this report was to survey the shoreline of Lake Erie and evaluate 34 sites from Springfield Township to Presque Isle Bay with respect to geologic development and bluff stratigraphy resulting from past glacial activity. The Coastal Zone Management Office will use the infor-

mation gathered to assist coastal residents in the area in maintaining and improving their property within environmental constraints.

The collection of data was accomplished by taking handheld aerial oblique photographs and review of individual site photos acquired from lake field survey and tax maps. On-site examinations of the coastal bluffs provided additional information. The latter included:

- a plane survey of each site to determine a recession line location

Bluff erosion at Lake Erie



- ground level photographs, including stratigraphic contacts and geological characteristics
- a stratigraphic analysis of the bluffs, depicting geometry, thickness of rods and overall height
- a description of the beach and beach profile to allow for analysis of bluff changes
- a general description of bluff physiography

Using sonar, topographic profiles were taken of the near-coast lake bottom. Many showed the normal pattern of scour and bar formation. Recorded deviations could be attributed to home construction along the shoreline, natural bedrock exposure below the surface or excessive beach/bluff erosion.

There was conclusive evidence that man has affected this environment and has brought about many changes in the area. There will be a 1982 summer field survey to revise this study.

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LOW COST SHORE PROTECTION:
DESIGN CRITERIA, ADVERSE IM-
PACTS, EXPECTED RESULTS AND
MODEL MUNICIPAL ORDINANCE -
for Lake Erie Institute for Marine
Science by Paul D. Knuth, Coastal
Research Associates

The three broad categories of shore erosion protection discussed in this report are:

- types of structures and their relative success in reducing shore losses
- the cause and effect relationship between erosion control structures and subsequent downdrift erosion
- design criteria providing at least a measure of success for erosion control structures

In section one, non-structural alternatives are also considered. Due to the variability of physical and man-related factors, no single method of protection is considered a "best" choice. Although the focus of this section is on low cost alternatives, the most effective and economical means of protection is often achieved through coordinated action under a comprehensive plan, which considers erosion processes over a long period of time.

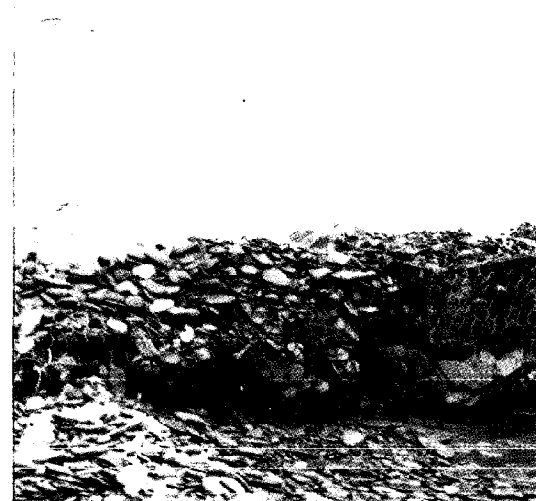
The second section deals with the impact of shore structures on physical forces in the beach zone. The shoreline of Erie County illustrates changing land use as farmland is being converted to residential development. For many years, the placing of shoreline protection structures (usually groins) along shore has been the solution. As a result, there has been a redistribution of sediment and a disturbance of natural wave patterns which does not correspond to local

erosion. Specific types of structures and the direct and indirect impact on the total beach are also examined.

The last section recommends design criteria to insure a measure of success for erosion control structures. Factors that must be considered include: functions of erosion control structures; site characteristics; engineering and economic factors; construction material; expected life span; physical impacts; and a review of structural and non-structural alternatives.

Information on management alternatives that modify potential for loss, such as planned unit development and building codes, is included. Examples of strategies that modify erosion hazards, such as grading and

Chicken-wire gabion for shore conservation



slope ordinances or standards for seawalls are given. An extensive bibliography refers to many reports on beachfront restoration and low cost shore protection.

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BLUFF SETBACK REGULATIONS FOR EIGHT LAKE ERIE COMMUNITIES by Erie County Department of Planning

Through Erie County's 1980-81 CZM Work Program, funds have been allocated to develop and administer bluff setback regulations for eight lake bluff communities as mandated by the Bluff Recession and Setback Act of 1980. They are North East Township, Harbor Creek Township, Lawrence Park Township, Millcreek Township, Fairview Township, Lake City Borough, Girard Township and Springfield Township.

A subcontractual agreement between the Erie County Department of Planning and the eight municipalities was designed to adopt:

- a setback ordinance and regulations that meet the minimum setback distance for each class of structure
- a bluff setback permitting process (building permit system) which will be administered by the zoning administrator
- a procedure for monitoring substantial improvements to struc-

tures located within the designated bluff setback distance

- a variance procedure for cases in which an established setback distance prevents any construction or when a structure or utility requires access to the lake over or through the bluffs for operating purposes
- a procedure to amend the municipal setback ordinance
- an administrative procedure for maintaining records of all correspondence, applications for permits, and issuance and denial of such permits
- a policy of alerting permit applicants, when permits are granted, that the bluff setback requirements are not a guarantee against future erosion damage.

The county and state representatives assisted all local communities in the technical work program. Upon completion of the draft bluff setback regulations each municipality sent a copy to the county and to the State Coastal Zone Management office for review.

All municipalities have now officially adopted their approved versions of the Bluff Setback Regulations.

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COASTAL ZONE MANAGEMENT WORKSHOPS by the League of Women Voters

During 1980 and 1981, the Erie County League of Women Voters organized three public awareness workshops. They focused on ways to help property owners who are experiencing bluff recession or shoreline erosion problems learn more about the geologic processes causing these problems. The programs explored what the property owners could do to retard these natural processes. The incidence of bluff recession and shoreline erosion and its consequences is a very critical problem in the Erie region and the Pennsylvania Coastal Zone Management Program (CZM) has focused a great deal of effort toward finding ways to help people address this situation. The workshops are an example of one way in which the program has tried to help Erie residents.

Workshop of April 19, 1980

Mr. E. James Tabor described the Pennsylvania CZM Program and its objectives, followed by Mr. Daniel Lenyo, who explained the requirements of the Dam Safety and Encroachments Act and Regulations. Mr. Paul Knuth presented an overview of the Lake Erie shoreline. A geologic history of the area was given by Mr. David Thomas and a question and answer session ended the workshop.

Workshop of December 6, 1980

The main topic of this meeting was to promote an understanding of the Federal and State permit programs for water obstructions in Lake Erie. The speakers were Mr. David Skellie, Acting Director of the Erie County Department of Planning, Mr. Thomas D'Alfonso and Mr. Arthur Klein who discussed permit programs of the Bureau of Dams and Waterway Management and the Army Corps of Engineers, respectively. A question and answer period reflected serious citizen concern about lack of cooperation between these agencies. Mr. Paul Knuth used a slide presentation to explain shoreline protection devices historically in use throughout the Great Lakes.

Workshop of October 29, 1981

Mr. Eric R. Conrad from DER and Mr. Paul D. Knuth addressed many of the questions raised at the December meeting which had needed further research. The program concluded with a discussion of methods available to property owners to help retard shoreline erosion and bluff recession.

The following study reports a statewide investigation with application to both coastal zones.

EXECUTIVE SUMMARY AND FINAL STUDY REPORT, DER PERMIT IMPROVEMENT STUDY by Department of Environmental Resources and Roy F. Weston, Inc. Environmental Consultants-Designers

The Pennsylvania Department of Environmental Resources wanted to simplify the regulatory process in handling permits and improve procedures for compliance monitoring. A study was undertaken to provide ideas and suggestions to upgrade organizational and administrative activities. Four permit areas of concern to the Coastal Zone Management Program were selected for analysis. These were:

- National Pollution Discharge Elimination System (NPDES) permit-industrial waste and sewerage permits
- Water Quality Management (WQM)-industrial wastes and sewerage permits
- solid waste processing and disposal permits
- water obstruction and encroachment permits

Interviews were conducted with DER personnel involved in issuing permits and monitoring compliance with regulations. Also interviewed were persons concerned with these procedures in other federal, state, interstate and local agencies, plus representatives of the business community. The study concluded with options and recommendations on organizational, procedural and related regulatory needs to improve permit processing. The components of a desirable system would include equity and impartiality in the treatment of users and enforcement of rules, consistency in policies, understandable requirements and open working relationships between all concerned. Authority would be clearly delineated and all responsibilities would be well-defined. The organization should have the ability to adapt to changing needs and demands.

INDEX-COASTAL ZONE PROJECTS COMPLETED IN 1982

DELAWARE ESTUARY

Project Name/Location/Description

RIDLEY CREEK WATERSHED STORMWATER MANAGEMENT PILOT STUDY - Delaware County

- A stormwater management plan to be developed in accordance with Act 167. Upon completion, the County will amend local ordinances and plans to adopt the new plan.

JOINT COMPREHENSIVE PLAN FOR FOLCROFT, NORWOOD AND EDDY- STONE BOROUGH - Folcroft, Nor- wood and Eddystone Boroughs in Delaware County

- A joint Comprehensive Plan will be developed in conformance with the CZM Program. Preparation will lead to further action, including development of new zoning ordinances and subdivision regulations.

REUSE OF SELECTED SITES IN THE DELAWARE COUNTY COASTAL ZONE - Delaware County

- Phase Two of a CZM project to develop and implement a strategy for water-related industrial reuse.

RIVERWALK DESIGN STUDY - Phila- delphia City in Philadelphia County

- A study to plan, design and recommend methods of implementing a riverwalk system along the Central Philadelphia waterfront. The city will require the riverwalk in all future projects within the prescribed boundaries.

DELAWARE RIVERFRONT DEVELOP- MENT STUDY - Philadelphia City in Philadelphia County

- Preparation of a Comprehensive Plan for Philadelphia's North Delaware and South Schuylkill Waterfront Districts in cooperation with the CZM Program.

JAMES ARMSTRONG MEMORIAL PARK-DESIGN AND ENGINEERING - Bensalem Township in Bucks County

- With completion of a recreational feasibility study, the Township will now select design and engineering drawings and construct the facility.

NESHAMINY STATE PARK MARINA EXPANSION AND REHABILITATION PLAN - Neshaminy State Park in Bucks County

- Using CZM and authorized state funds, design and engineering drawings and specifications will be prepared to expand the Neshaminy Marina.

ZINC WORKS INDUSTRIAL REDE- VELOPMENT PLAN - Bristol Borough in Bucks County

- A feasibility study for redevelopment of an underutilized waterfront site.

TULLYTOWN BOROUGH PARK- DESIGN AND ENGINEERING - Tully- town Borough in Bucks County

- Phase Two of a plan to construct a recreational facility includes completion of design and engineering drawings prior to development.

FALLS TOWNSHIP WATERFRONT PARK-STAGE 3 DESIGN AND ENGIN- EERING - Falls Township in Bucks County

- Phase Three of a recreational feasibility study will complete design and engineering drawings.

MORRISVILLE BOROUGH COMPRE- HENSIVE PLAN UPDATE - Morrisville Borough in Bucks County

- A Comprehensive Plan will be prepared and considered in conformance with the CZM Program.

LAKE ERIE

Project Name/Location/Description

ELK CREEK PUBLIC ACCESS PROJECT-STAGE 3A DESIGN AND CONSTRUCTION -Girard Township in Erie County

- Stage 3A includes completion of design and engineering drawings and construction of the planned recreational facility.

FAIRVIEW TOWNSHIP BLUFF LINE AND STRUCTURAL LOCATIONS RECORDING - Fairview Township in Erie County

- A model monitoring mechanism to improve enforcement of the Bluff Recession and Setback Act will be updated. Identification and location of structures in the hazard area will be charted.

PRESERVATION OF WESTLAKE AREA SWAMP/WETLANDS STUDY - Millcreek Township in Erie County

- A feasibility study will be conducted for site design to preserve coastal features and habitat areas at the Westlake Middle School.

PRESQUE ISLE STATE PARK ECOLOGICAL STUDY - Presque Isle Park in Erie County

- A document to aid in future decision-making will be produced based on a study of eco-systems in Presque Isle State Park.

BAYFRONT NEIGHBORHOOD-EDUCATION AND PLANNING PROGRAM - Erie City in Erie County

- Enhancement of the community through publications, citizen participation, educational workshops and physical improvements.

PORT OF ERIE RAIL ACCESS AND RELATED PUBLIC USE STUDY - Erie City in Erie County

- The study will assess the degree to which rail access meets the needs of bayfront users. The study also considers technical and environmental effects on the Port Access Road resulting from the abandonment of rail service in the bayfront area.

IMPLEMENTATION OF RECOMMENDED PROPOSAL(S) OF THE ERIE PORT DEVELOPMENT STUDY - Erie City in Erie County

- Preparation of a Canadian outreach industrial marketing project and a study on means to increase the city revenues from the commercial and sport fisheries will be completed as recommended in the Erie Port Development Study.

PUBLIC DOCK AREA MASTER PLAN -Erie City in Erie County

- A master plan to improve the public dock area will be prepared.

FLOATING TIRE BREAKWATER RECREATIONAL FISHING REEF DEMONSTRATION PROJECT - Erie City in Erie County

- The environmental impact of a recently installed floating tire breakwater will be studied.

MODERN TOOL FEASIBILITY STUDY -Erie City in Erie County

- The Preservation Project of Erie, Inc. will conduct an overview of the Modern Tool building, with plans for rehabilitation and/or redevelopment.

**LAKESIDE DRIVE RECREATION
AREA STUDY - Lawrence Park
Township in Erie County**

- A master plan for expansion and upgrading of the Lakeside Drive Recreation Area will be prepared.

**NORTH EAST TOWNSHIP ZONING
ORDINANCE REVISIONS - North East
Township in Erie County**

- Preparation of a zoning code in conformance with the CZM-funded Northeast Regional Comprehensive Plan.

**NORTH EAST BOROUGH ZONING
ORDINANCE REVISIONS - North East
Borough in Erie County**

- Preparation of a zoning code in conformance with the CZM Program.

**NORTH EAST REGIONAL COMPRE-
HENSIVE PLAN - North East Borough
and Township in Erie County**

- A Comprehensive Plan will be prepared and considered in accordance with the CZM Program.

**ANGLING AND BOATING USE AND
ANGLER HARVEST CENSUS OF
LAKE ERIE AND PRESQUE ISLE
BAY-PHASE II - Lake Erie and
Presque Isle Bay Shoreline in Erie
County**

- Final phase of angling and boating use survey. The results will address immediate and future fisheries and boating access management problems in the Lake Erie Coastal Zone.

**HISTORIC RESOURCE PROTECTION
PLAN FOR THE LAKE ERIE
COASTAL ZONE - Lake Erie Shoreline
in Erie County**

- An historic resources protection plan will be prepared as a guide for future planning.

**OIL AND GAS DRILLING PERMIT
STUDY IN THE LAKE ERIE
COASTAL -Lake Erie Coastal Zone**

- An electronic data processing retrieval system will be developed for processing and evaluating technical and environmental data when reviewing oil and gas development permits.

**PREDICTIVE MODEL FOR THE LAKE
ERIE SHORELINE STABILIZATION
STRUCTURES - Lake Erie Coastal
Zone**

- A predictive model will be developed to determine and optimize shoreline response to shore protection devices.

**ERIE COASTAL PROPERTY OWNER-
SHIP UPDATE AND BLUFF RECES-
SION ANALYSIS AND CONSULTING
SERVICE -Lake Erie Shoreline in Erie
County**

- A 1978 computerized coastal property ownership list will be updated. Owners will be able to receive analyses of bluff recession on their land and recommendations for dealing with it.

**FOLLOW-UP INVESTIGATION OF
SELECTED EROSION FACTORS IN
THE LAKE ERIE COASTAL ZONE -
Lake Erie Shoreline in Erie County**

- Continuation of project which studied the erosion in Lake Erie to provide scientific information needed for future planning.

**FAIRVIEW, GIRARD, HARBOR-
CREEK, LAWRENCE PARK, MILL-
CREEK, NORTH EAST, AND
SPRINGFIELD TOWNSHIPS AND
LAKE CITY BOROUGH BLUFF
SETBACK REGULATION ADMINIS-
TRATION - As listed coastal
communities in Erie County**

- Administration for local bluff setback regulations required by Act 48.

**COASTAL ZONE MANAGEMENT
WORKSHOPS - Lake Erie Coastal
Zone in Erie County**

- A workshop will be held in each of the three CZM districts in Erie City to inform the public of current information.

**DEVELOPMENT AND IMPLEMEN-
TATION OF FLOOD PLAIN
MANAGEMENT REGULATIONS -
Statewide**

- The DER and the Bureau of Dams and Waterway Management will develop and implement new regulations to meet the Pennsylvania Flood Plain Management Act (Title 25, Chapter 106).

INFORMATION

If you have questions or a request for additional information, contact:

PA Department of Environmental Resources
Bureau of Water Resources Management
Division of Coastal Zone Management
P.O. Box 1467, Harrisburg, PA 17120
(717) 783-9500

Delaware Valley Regional Planning Commission
21 South Fifth Street
Philadelphia, PA 19106
(215) 592-1800

Erie County Department of Planning
Erie County Court House
Erie, PA 16501
(814) 452-3333

Lead State Agency:
PA Department of Environmental Resources
Division of Coastal Zone Management
E. James Tabor, Chief

Delaware Estuary Coastal Zone Consultant:
Delaware Valley Regional Planning Commission
John J. Coscia, Executive Director
Michael A. Wolf, Regional CZM Program
Coordinator

Lake Erie Coastal Zone Consultant
Erie County Department of Planning
Judith M. Lynch, County Executive
David A. Skellie, Acting Planning Director

PUBLICATIONS

Copies of the complete case studies are available at the PA Department of Environmental Resources, Harrisburg, PA; Delaware Valley Regional Planning Commission, Philadelphia, PA; Erie County Department of Planning, Erie, PA.

The following publications are available from the PA Department of Environmental Resources:

A Geotechnical Investigation of the Coastal Bluffs of Erie County, PA by Paul D. Knuth, Coastal Research Associates, 1981.

Commonwealth of Pennsylvania Coastal Zone Management Program and Final Environmental Impact Statements.

Philadelphia River Resources by William E. Toffey, Philadelphia City Planning Commission, 1982.

Low Cost Shore Protection. U.S. Army Corps of Engineers, 1981. A 36 page brochure detailing methods to control or slow down erosion at very low cost.

Low Cost Shore Protection. U.S. Army Corps of Engineers, 1981. Three volumes: A Guide to Engineers and Contractors; A Guide for Local Government Officials; A Property Owner's Guide.

The Role of Vegetation In Shoreline Management - Great Lakes Basin Commission, 1978. A 32 page booklet prepared to provide shoreline property owners along the Great Lakes with a comprehensive view of shoreline and bluff erosion problems. The solutions emphasize vegetation establishment and management and its role in shoreline stabilization.

National Wetlands Inventory Maps, U.S. Department of Interior, Fish and Wildlife Service. 1:100,000 and 1:24,000 scale maps are available for approximately 1/3 of Pennsylvania. These mapped areas are in Western Pennsylvania and the lower Delaware River Basin.

Shoreline Erosion and Flooding - Erie County, Great Lakes Research Institute, June 1975. 172 pages and appendices. The purpose of this study was to identify and classify hazard areas on the shore of Lake Erie. Limited availability.

GRAPHIC CREDITS

- p 4 Pennsylvania Fish Commission
- p 6 Stephenson Air Photos, Mount Laurel, NJ
- p 7 Delaware County Planning Commission
- p 8 Delaware County Planning Commission
- p 9 Free Library of Philadelphia
- p 11 Philadelphia Planning Commission
- p 13 Naturescape Magazine, January 1982 prepared by Lane H. Kendig and Mark Book
- p 15 Bucks County Planning Commission
- p 17 Uniplan Research Associates, Princeton, NJ
- p 18 Paul B. Moyer Air Photos, Lexington, PA
- p 19 Cee Jay Frederick Associates, West Chester, PA
- p 23 D.A. Johnson & Associates, Cory, PA
- p 25 Albert L. Massey, Landscape Architects, Inc., Erie, PA
- p 28 Bayfront Neighborhood Action Team Organization, Erie, PA
- p 29 Weber Murphy Architects, Inc., Erie, PA
- p 31 Hill & Hill Engineers, Inc., North East, PA
- p 32 Erie County Planning Commission
- p 33 Erie County Planning Commission
- p 34 Erie County Planning Commission

The Coastal Zone Management Program is partially financed by the Federal Government through the Office of Ocean and Coastal Resources Management, National Oceanic and Atmospheric Administration under Section 306 of the Coastal Zone Management Act of 1972 (P.L. 92-583) as amended.

This booklet was prepared by:
Michael A. Wolf, Concept and Supervision
Linda A. Diamond, Text and Layout
John O'Reilly, Graphics and Artwork

